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CONTENTS

TEXT PAGES

PLATES AND ILLUSTRATIONS

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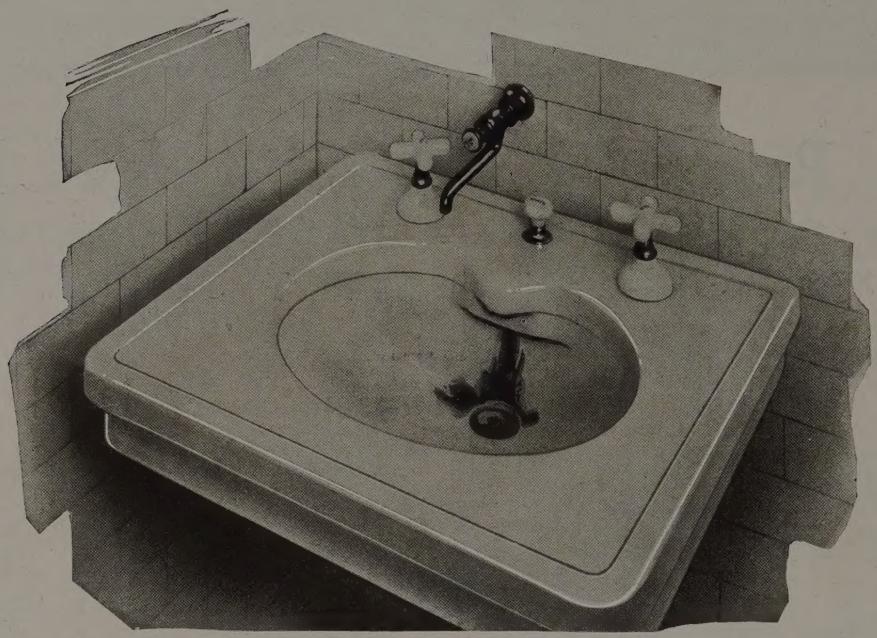

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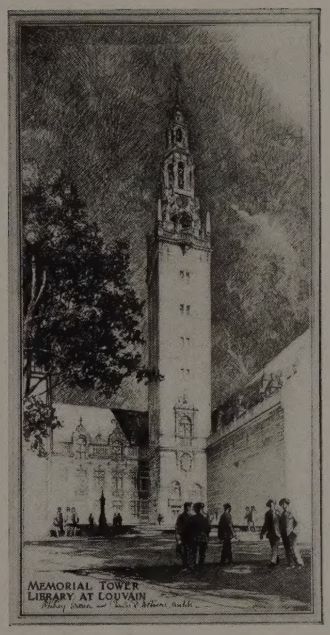
DESIGN FOR THE LIBRARY
AT LOUVAIN
DESTROYED BY THE GERMANS · 1914
RESTORED BY AMERICA · 1922
WARREN AND WETMORE ARCHITECTS

ARCHITECTVRE
THE PROFESSIONAL ARCHITECTVRAL MONTHLY
VOL. XLV MARCH, 1922 NO. 3

To Rebuild the Library at Louvain

As the Gift of the American People

Warren & Wetmore, Architects



IT was on July 28, 1921, that Dr. Nicholas Murray Butler, in the presence of many celebrities, laid the corner-stone of the new Library of the University of Louvain, which has been planned as a gift of the American people to the people of Belgium. The ceremonies attending the laying of the stone were impressive. A message from President Harding was read; King Albert delivered an address, as did former President Poincaré, of France, and Premier Carton de Wiart, of Belgium. Cardinal Mercier, primate of Belgium, blessed the building.

As the corner-stone swung into place, Dr. Butler said:

"America will watch this splendid building rise like the phœnix from its splendid ashes to bear witness to the unbreakable bonds that bind America to Belgium, to France, to Great Britain, and to all their allies. A nation cannot do battle in a great cause or for a noble ideal without receiving a new baptism of spirit.

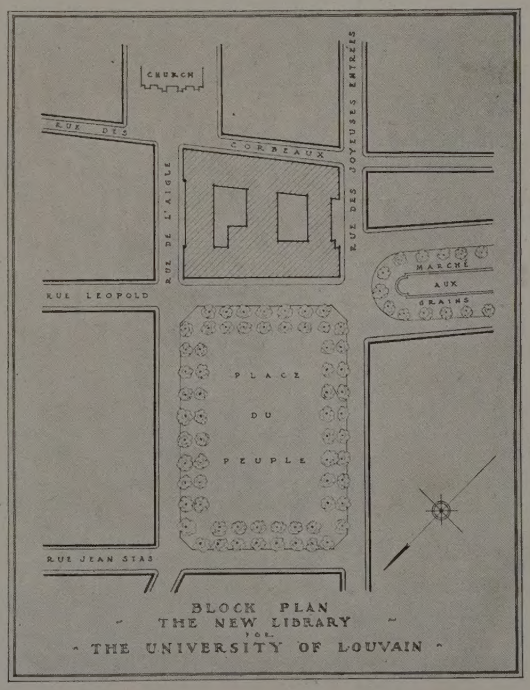
"Such a new baptism of spirit has come to the people of the United States, and this act of theirs, so small when compared with their ambitions and hopes, is convincing evidence that America will never stand idly by while freedom is destroyed, while liberty is turned into slavery, or while the cannon and flames of war carry destruction to the most splendid monuments to human aspirations and human accomplishments."

The question is now, Will America see it through? Belgium confidently believes it will, even though it means a matter of almost a million dollars.

The old library, erected in 1425, was originally used as a Cloth Market by the merchants of Louvain. With the growth of the university, space was needed for the storing of the manuscripts accumulated through the centuries, and permission was given by the authorities to use the floor of the old Cloth Market. Gradually floor after floor was taken until the library finally absorbed the greater part of the building. It was still known, however, by the traditional name of Cloth Market.

Then came the Great War, with the German invasion, and the wilful destruction of this beautiful building on the night of August 25, 1914. There was absolutely no military necessity for it.

German apologists have said that the treasures of the library were not burned, but that thousands of volumes were taken from the place before the fire. If that is so, where are the books that were saved? Certainly they are not in Belgium. By the terms of the Treaty of Versailles, Germany is compelled to send ten thousand books a month to Louvain in reparation. These books are picked by a committee of scholars selected by Louvain University and con-



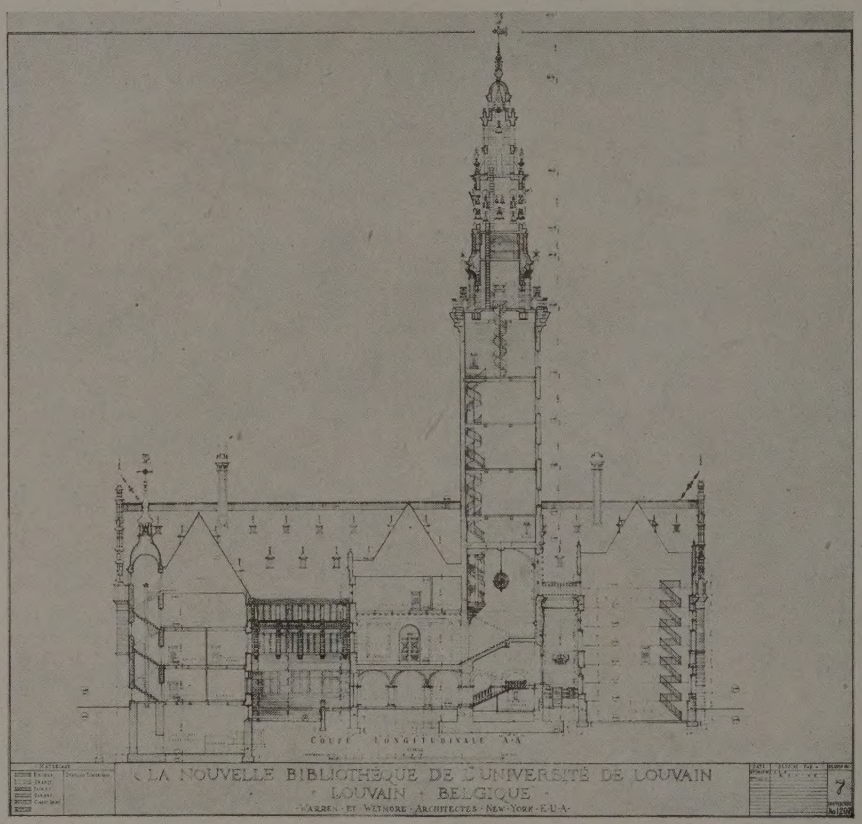
BLOCK PLAN
THE NEW LIBRARY
FOR
THE UNIVERSITY OF LOUVAIN

firmed by King Albert. The libraries of Heidelberg, Leipsic, Jena, and Bonn are being carefully combed for literary treasures that will help to repair the damage. But so far none of the old Cloth Market books have been found.

Only one manuscript of the old library was saved. Professor van der Essen, of the university, happened to have at his home manuscript No. 906, which contains the official correspondence of the university from about 1583 to 1637. The rest is with the destroyed parchments of Alexandria.

The loss, of course, was not only Belgium's but civilization's.

Quite inevitably, there arose after the war the International Committee for the Reconstruction of the Library of Louvain, the presiding officer of which is M. Imbart De la Tour, who is also president of the French Institute. Dr. Nicholas Murray Butler was made chairman of the American committee, which subsequently asked to take over the whole project. It was M. De la Tour who invited Whitney Warren, of Warren & Wetmore, to become the architect.



Mr. Warren, with Mr. Charles D. Wetmore, his associate, has been responsible for many notable structures, among others the Grand Central Station in New York, the Chelsea Docks, whence the big steamers leave for Europe, the New York Yacht Club, the Ritz, the Biltmore, the Belmont, and the Vanderbilt hotels in New York, the Ritz in Atlantic City, the Ritz in Montreal, the Ritz in Philadelphia, and the Broadmoor in Colorado Springs.

It was especially fitting that Mr. Warren be chosen for his task. A warm believer in the cause of the Allies, he left for France at the very outbreak of the war and, although in an unofficial capacity, did much to let France know where American sympathies lay.

As far back as 1905, he had been made a member of the French Institute.

Last year he went over to Louvain and chose the site himself; it occupies one side of the Place du Peuple and was originally intended for the Palais de Justice, or Magistrates' Court of the Province of Brabant. But it was agreed that it was the ideal place for the library. . . .

The building's depth will be 150 feet, while the façade will be 220 feet in length, with a wide loggia, or covered arcade, with seventeen arches. Rain is frequent in Louvain, so the arcade, which will contain various tablets, will be practical as well as beautiful. At either end of the building will rise the stacks of books.

The work on the stacks will be pushed first, for the immediate necessity is some place for the storing of the books that are piling up all over Louvain. Not only Germany's monthly ten thousand are coming, but the Allied countries, too, are helping, so that more than three hundred thousand volumes are already on hand. The work of gathering the books from the United States has been under the direction of Mr. Putnam, librarian of the Congressional Library, while Mr. Lane, head of the Widener Library at Harvard, has done valiant service also.

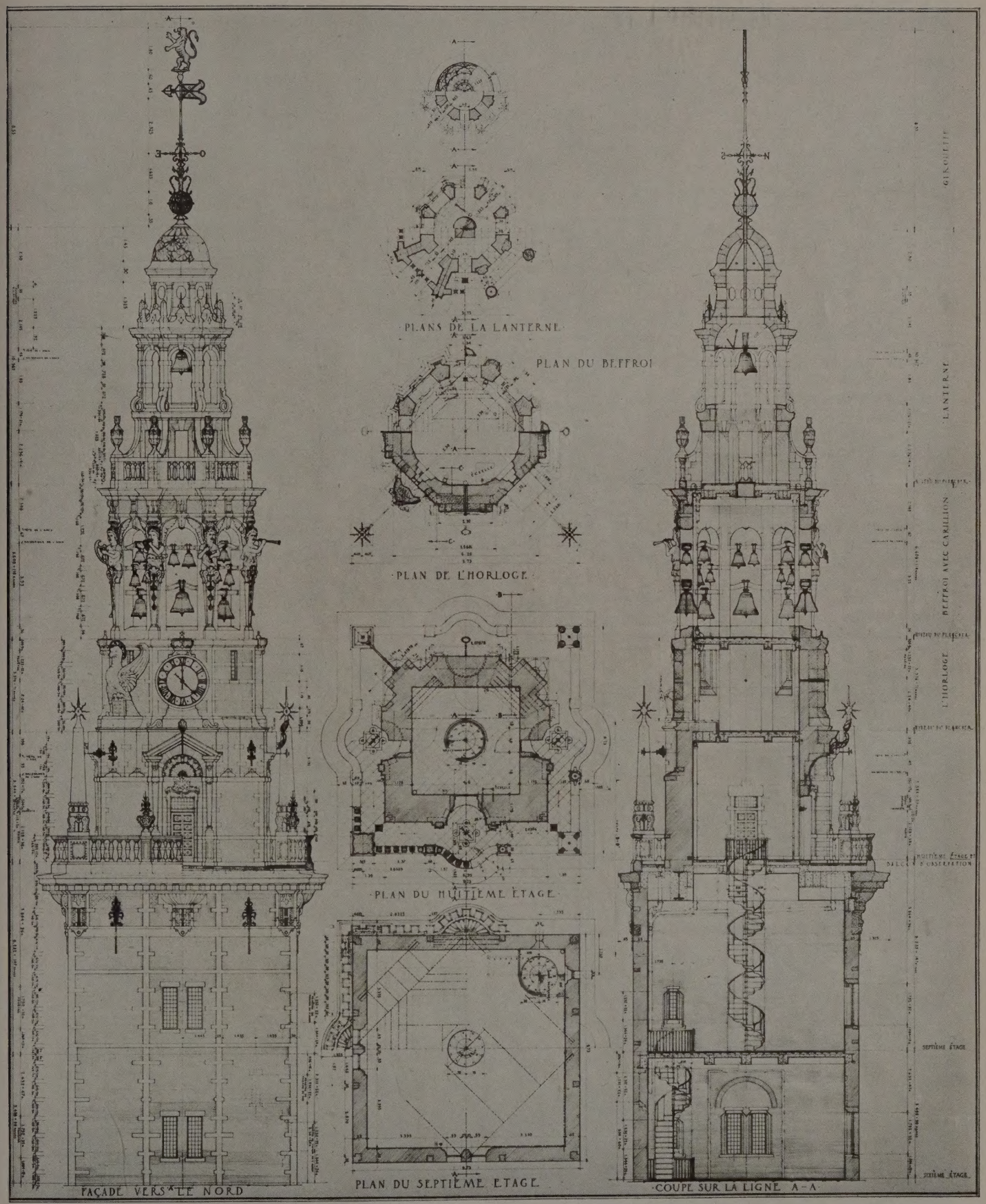
After the stacks will follow the façade and portico. Midway on the façade are to be raised the ornaments in the form of a Gothic shield. The principal figure will be that of Notre Dame des Victoires; to the left will be a figure of St. George; to the right, a representation of St. Michael. Interwoven in the balustrade is to be the inscription, "Furore Teutonica Diruta, Dono Americano Restituta" ("Destroyed by Teutonic Fury, Restored by American Gift"). "The inscription will strike no one in the eye, but it will be there for all the world to read."

In the court the memorial tower will rise to a height of 275 feet. The chimes, of course, will be a feature. On either side of the clock there will be the four figures of the Gospel: the lion, the angel, the bull, and the eagle.

The architect has naturally designed the new library in the style of the Flemish Renaissance, and Cardinal Mercier, especially, expressed his pleasure at this. The building stone will be of local products. What iron and steel is needed will come, it is hoped, from America, as will the library stacks.

Ultimately the library will house two million books and will have a seating capacity for three hundred readers, twelve seminary rooms for special classes and students, a small museum, and, what is very important, the offices of administration. The latter are essential, for the new library will be the soul of the university.

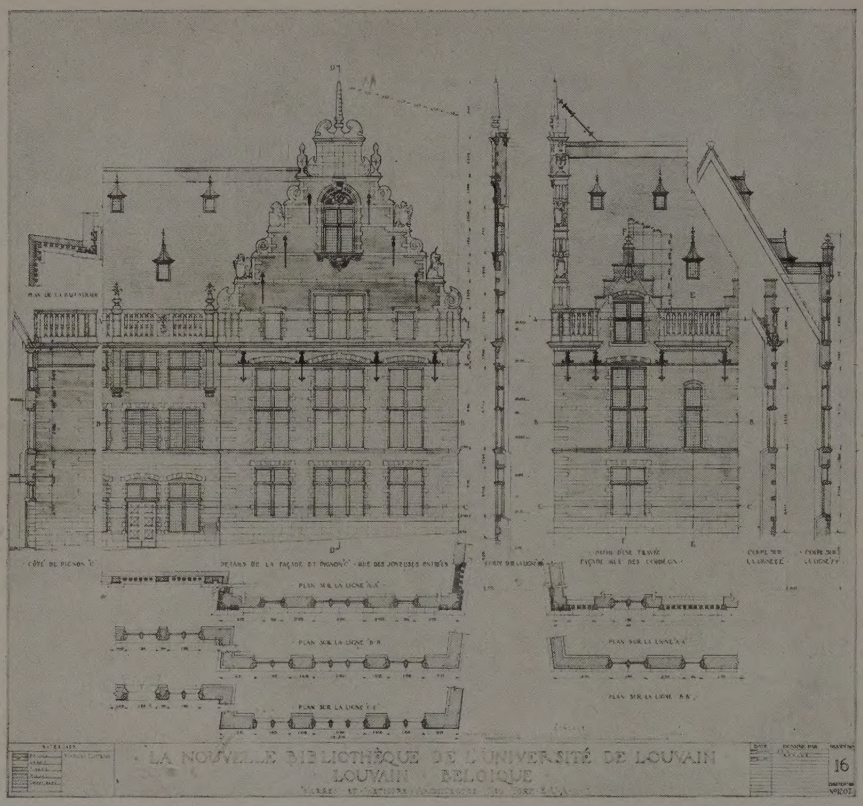
Mr. Warren estimates that the building will cost a million dollars. The American committee, of which Dr. Butler is president, has on it many notable Americans—among them



LA NOUVELLE BIBLIOTHÈQUE DE L'UNIVERSITÉ DE LOUVAIN, LOUVAIN, BELGIQUE. Warren & Wetmore, Architects, New York, U. S. A.

J. P. Morgan, Thomas W. Lamont, W. H. Crocker, Eugenius H. Outerbridge, Herbert Putnam, and Henry S. Haskell. These, together with the late Alexander H. Hemphill, raised about one hundred and sixty thousand dollars when the plans for the new library were laid. This has been expended in clearing the site and sinking the foundation.

Mr. Warren thinks that the task is peculiarly an undergraduate one, and that Harvard, Yale, Princeton, and Columbia might well take the initiative and line up the other colleges of our country.



The Building as Described by the Architects

The location is the Place du Peuple, by far the best and most imposing site in the city of Louvain. The buildings surrounding this square were destroyed by the Germans at the same time as the library. The tower will dominate the surrounding country.

The principal façade will consist of a covered arcade, which will serve as a general meeting-place for the students, over which is placed the main reading-room lighted by large windows.

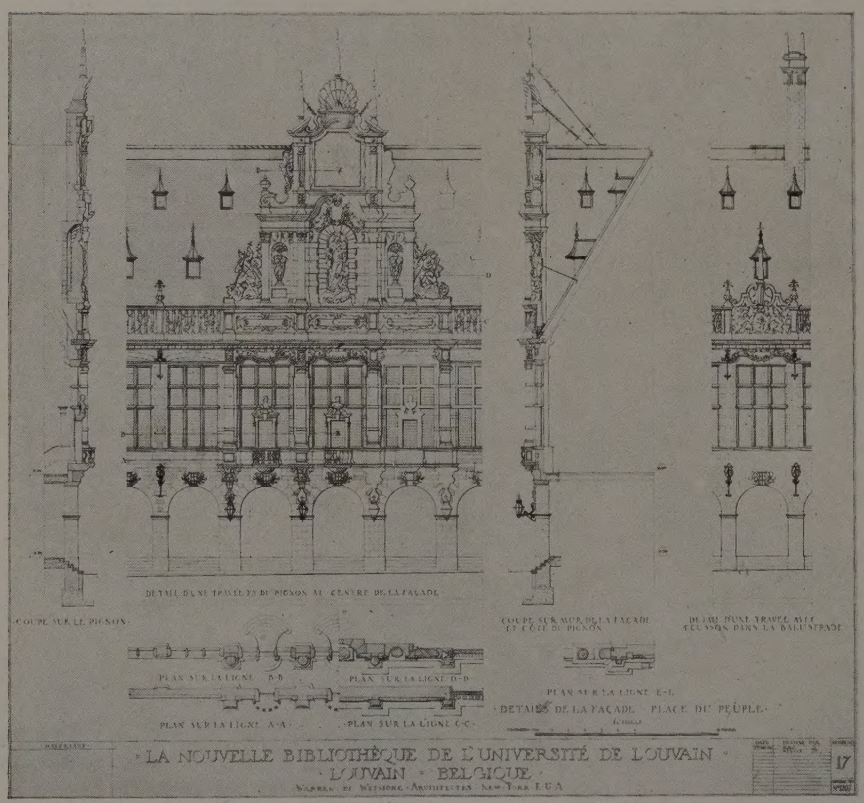
The material to be used is of local white stone and red brick, with blue-slate roof and copper flashings, certain details of the façade being gilded, as is usual in monuments in Belgium.

On the ground floor besides the arcade already mentioned will be a small museum for the treasures of the library, also the administrative offices.

A monumental stairway leads to the second story, on which is the catalogue and distributing room, situated in the very heart of the building, connecting the reading-room (occupying the entire front) with the stack (occupying the entire rear), thus giving the most economical and efficient service possible. Twelve seminars or special study-rooms complete the building.

The stacks have an eventual capacity of two million books, and the seating in the reading-room is for three hundred—figures required by the university authorities.

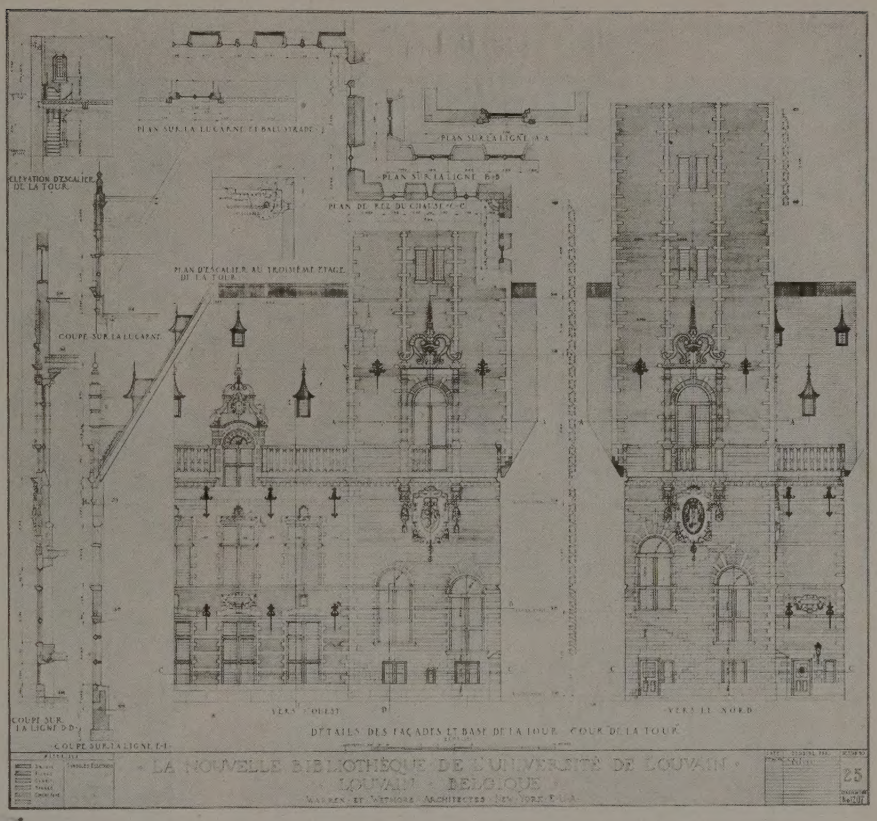
The façade is symbolical in composition and detail: in the central motive, interest centres on the figure of Notre Dame des Victoires, supported by St. George and St. Michael crushing the Evil Spirits; above is a bas-relief representing the destruction of the old library, while underneath, crowning the doors leading to the three exterior pulpits, are busts of the heroes of the war: King Albert, Cardinal Mercier, and Queen Elizabeth. The coats of arms of Belgium and the United States are framed in the high balustrade which



surrounds and crowns the building; in this balustrade is interwoven an inscription describing the destruction of the old library and the fact that the restoration is a gift of the American people.

On the stepped gables at either end are commemorative tables and the heraldic animals of the allied powers: the eagle, the unicorn, the lion, the cock, etc.

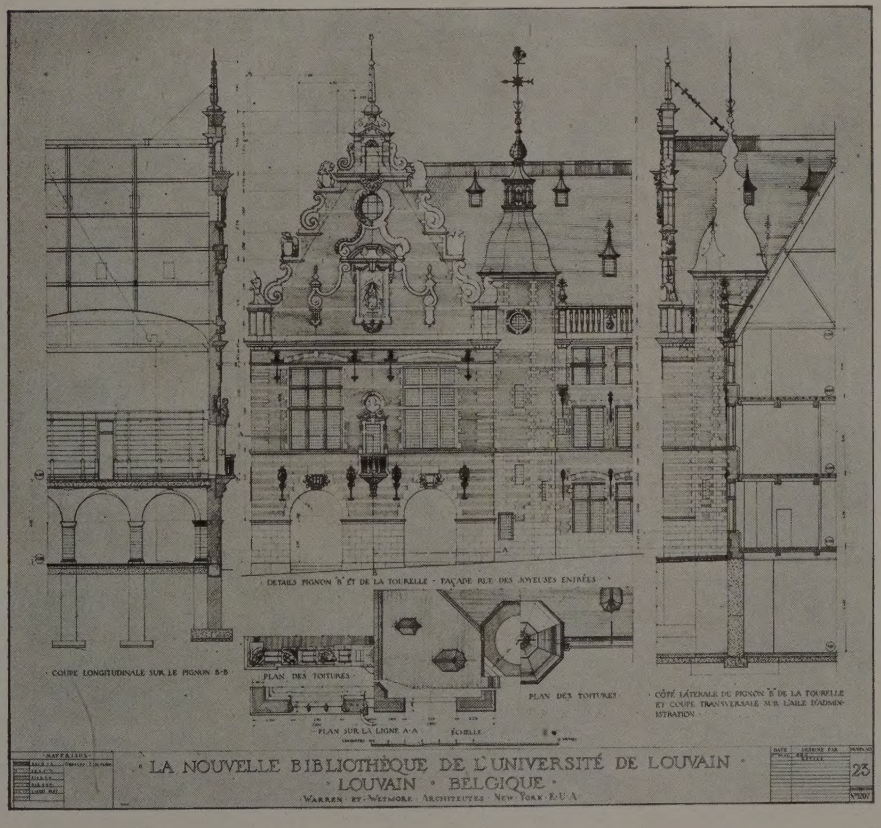
The tower crowned by the carillon, or chimes, so universal in all Flemish towns, typifies the voice of the university—the voice of Truth. It is supported on the four corners by the beasts or symbols of the Evangelists: the bull, the eagle, the angel, and the lion. Hourly, this carillon will ring forth the national airs of those nations who fought in the Great War, that Honor, Right, and Justice might survive—"The Star-Spangled Banner," "The Marseillaise," "God Save the King," the "Brabançonne," etc.



Letter from Cardinal Mercier Accepting the Plans Submitted for the Restoration of the Library

THE ARCHBISHOP'S PALACE
MALINES, BELGIUM

The plans and drawings which you were kind enough to bring with you to show me are perfect. It is a joy as well as a duty to give you my congratulations.



Your project has a character eminently practical. All the different departments are provided for and you have solved the various problems which arose therefrom, with an elegant simplicity.

With a sense of delicacy which touched me deeply, you laid to one side your American ideals to follow our national ambitions by designing a building recalling the purest traditions of our Flemish and Brabançonne art.

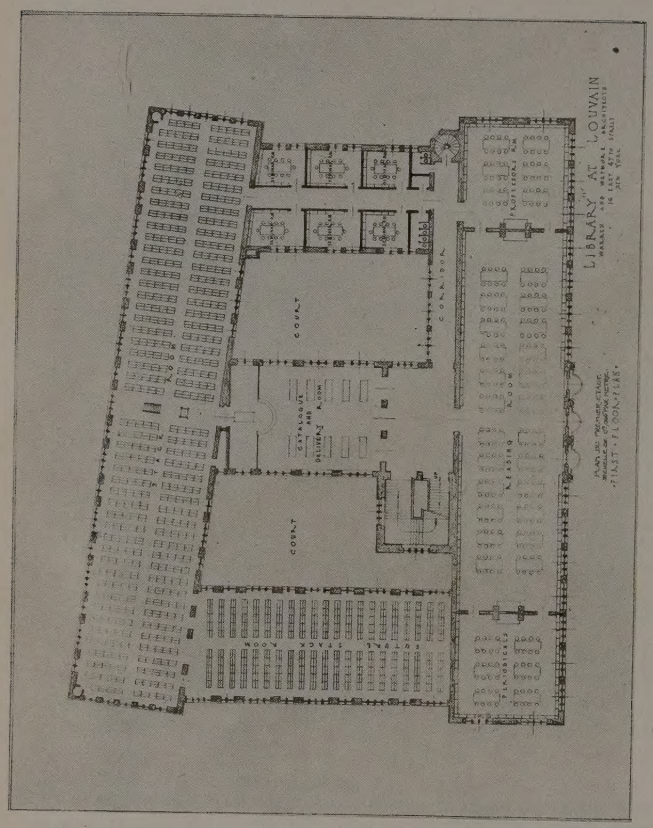
But even finer and more touching than the gift of the Library to Louvain is the gesture of the Nation which has claimed the privilege of rebuilding it.

To the end the American People intend to preach before the world the disinterestedness and cult of Justice. America entered the great war without having any interest either personal or national, but solely because she wanted Right to prevail and Injustice punished. Its first mission once achieved it does not wish that the results of the crime committed by the German incendiaries should be borne any longer by those who were their first victims, and to the obstination of Germany in her dishonor, she proudly opposes her will by re-establishing as soon as possible, the reign of Justice and the Triumph of Civilization in a great Scientific Institution.

The United States still grows in the eyes of the world and shall be great in History for having confided to the Committee for the Restoration of the University of Louvain the task of raising the ruins of the University, and when in the near future your compatriots visit our ancient Brabançonne city to admire the monument they will have the gratification, I do not doubt, to feel as they look upon it, that their generosity has spiritually enriched them to as great an extent even as it has helped us.

Please accept all my wishes for the success of the realization of the noble task and rest assured of my devotion to the American people.

✠ D. J. CARDINAL MERCIER,
Archbishop of Malines.


LIBRARY AT LOUVAIN
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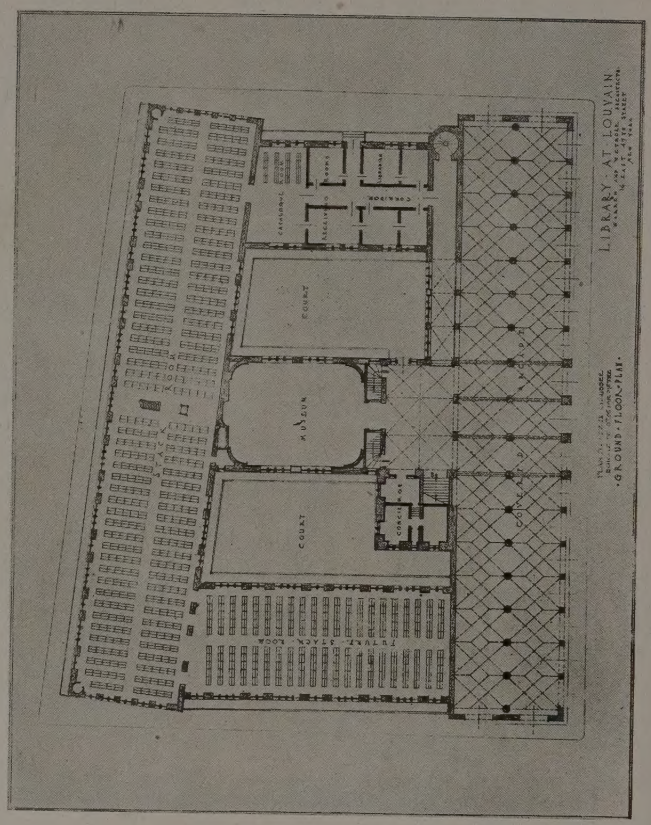
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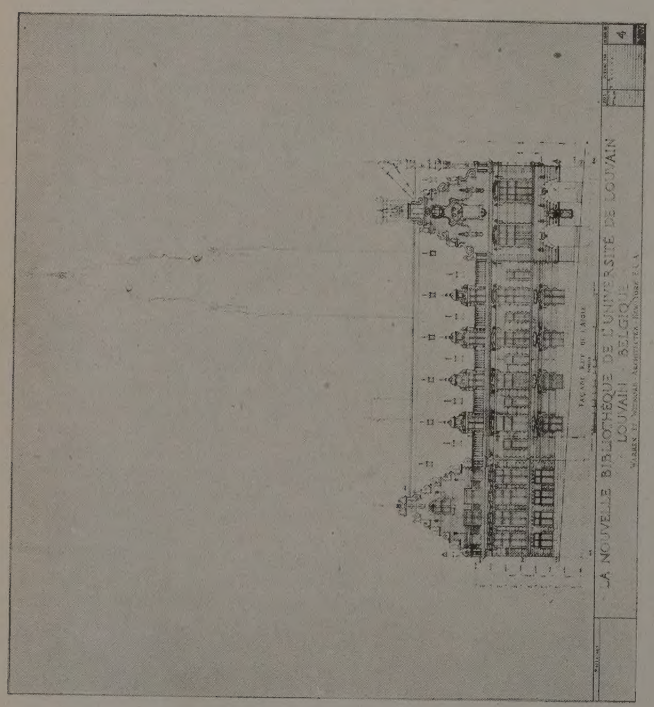
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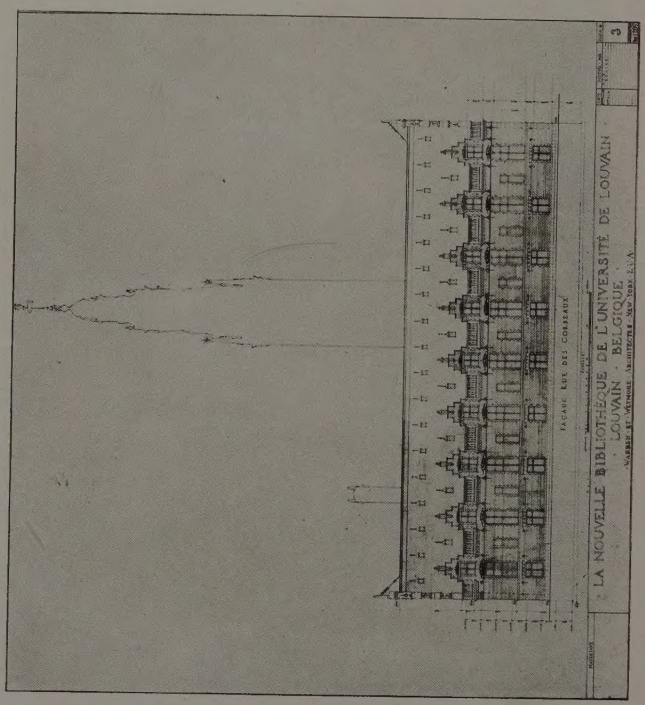
LOUVAIN

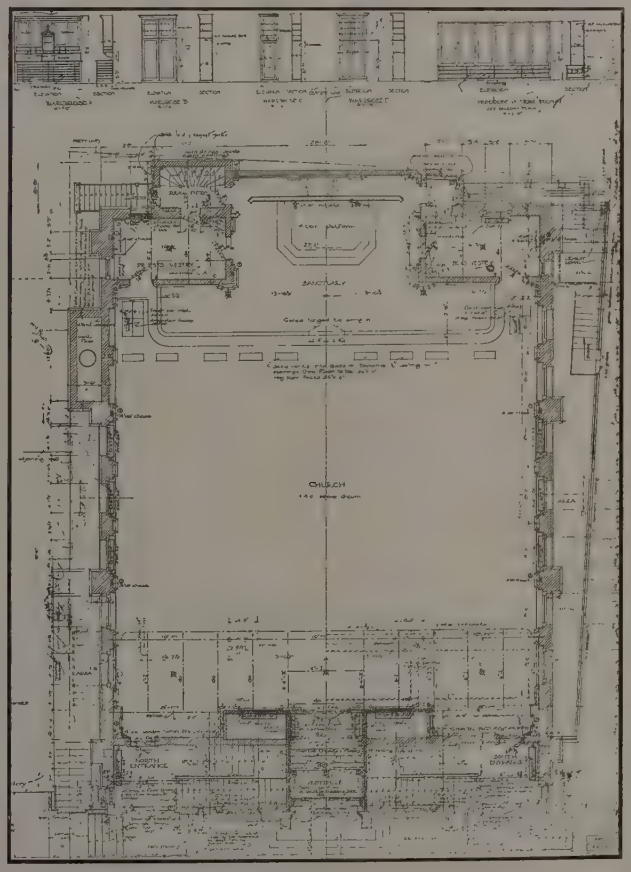

LA NOUVELLE BIBLIOTHÈQUE DE L'UNIVERSITÉ DE LOUVAIN
LOUVAIN - BELGIQUE

The Combination Building — Church and School

By John V. Van Pelt

A LAWYER met an architect lately on the morning train. "I hear you are getting busy," he said. "Not a thing doing," replied the architect. "Why, Smith told me he was going to have you make the designs for his new house. He said you were just the man to express in concrete form all the word 'Home' means." "He came in," said the architect dejectedly—"I couldn't do it." "My dear fellow," commiserated the lawyer, "what was the matter?" "Why, the idiot told me all about what he wanted me to express and then I found his wife insists on a suite of rooms for her mother right across the front of the house." "Um," mused the lawyer, "he needs me instead of you."

But circumstances will not always permit a divorce between the spiritual and material in a building. Even the "home" has its back door. This is increasingly true as the progress of civilization introduces new complexities. In mediæval times the adjuncts of a church were only a sacristy and living quarters for the priests. Now the Catholic churches of New York require an auditorium with moving-picture installation for entertainments, rooms for social gatherings, a fully equipped, say a twenty-classroom, school, and a rectory. Many of the Protestant churches have church buildings with a large auditorium, gymnasium, swimming-pool, Sunday-school rooms, committee rooms, society rooms, and living quarters for a staff of church workers.

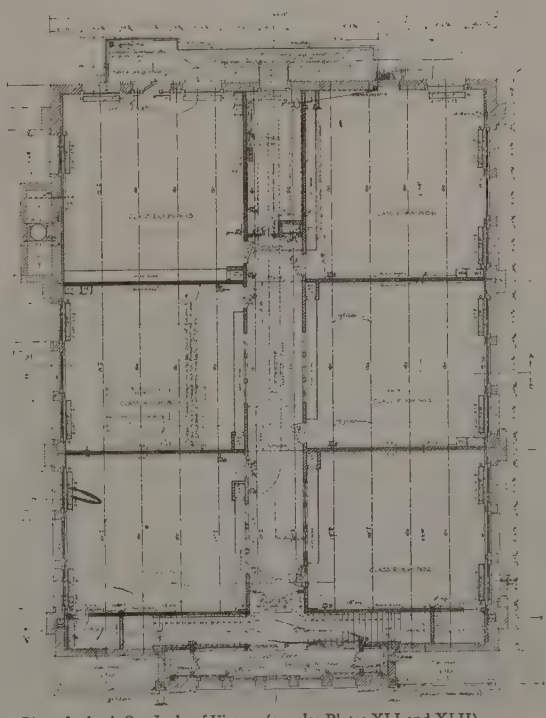


Plan of Church Our Lady of Victory.

It is interesting to compare these different combinations, and I propose taking them up in the chronological order of their appearance. The first that I remember as a proclaimed world wonder was of the commercial type—Adler & Sullivan's Chicago Auditorium building. That the Auditorium theatre was arranged in protest against the usual tiers of balconies was sufficient to attract attention, but that it formed part of a building containing a hotel and office-building made it a catchword for the press of the day. Now the grouping of a hotel and an office-building in a railroad station seems a logical combination, and subways have inured us to trains carrying loads of human freight under all sorts of buildings.

The second combination building to attract attention had different characteristics. In Boston the Baptist Church required a temple which must include, besides the main hall and its accessories, several minor halls and a series of stores and offices for rental purposes. Mr. Blackall, of Blackall & Newton, worked out a most interesting plan in which the main temple is one flight up with stores in the lower part of the building and offices and the other halls above the temple. In this composition the character of the large hall is announced by a broad expanse of wall surface, the offices by small windows.

The third structure that made much of a stir as a combination was the Broadway Tabernacle at 57th Street and Broadway, New York. A competition was held to select the architect, and immediately came to the fore the question, which has since been the most difficult one to answer for designs of this kind: "Should the character of the exterior of each dissimilar part express the particular portion it en-



Plan of school, Our Lady of Victory (see also Plates XLI and XLII).

closes at the expense of unity or should it aim at a greater whole and express throughout the character of the most important element?" If there is no dominating element, the question becomes more vexed.

Mr. J. Stewart Barney, the winner of the competition and architect of the Broadway Tabernacle, tells me that one of the other competitors frankly said he could not harmonize the church and required offices, so he placed his church of one style on the corner and his office-building in a different one behind it. Mr. Barney's design gave the office-building somewhat the effect of a church-tower, and in any event its style was quite at one with the church. The space allotted to different departments facilitated this, and above a certain height he was able to superimpose progressively smaller areas, offsetting these and decorating the whole with Gothic finials and ornament till he reached the apex. This adaptation and subordination to practical requirements is one of the tenets of Mr. Barney's creed, as it should be of any true architect.

It was in 1909 that I first came into close touch with this kind of problem. Mr. Franklin A. Green, deputy architect of the Board of Education of New York, was asked by successive parishes of the Roman Catholic Church to undertake some of their buildings, and associated me with him in the enterprise. The first that introduced a combination was St. Gabriel's School on East 36th Street. In the basement is a playground, gymnasium, and above it a chapel. This has entrances on either side which also give access for girls and boys, respectively, to a fully equipped twenty-classroom school on the four upper floors. Huge trusses concealed in the classroom partitions and running up a full story height support the part of the building that covers the chapel and so obviate obstructing columns. The general style of the building is reminiscent of Italian Renaissance. The chapel has windows on the front with engaged Ionic columns, the classrooms are separately grouped in large arched bays running up three stories with a crowning story situated at the level of the frieze of the building. The general aspect is that of a school, while the chapel is implied by the special windows. In this building the problem was not specially complicated, as the chapel was only incidental to the whole composition.

In the next ecclesiastical group that I built in association with Mr. Green, St. Ambrose's Church on West 54th Street, New York, the problem was much more difficult. There is an auditorium for social gatherings in the basement, a church that seats six or seven hundred on the first floor, then two floors of a school, the equivalent of sixteen classrooms, above that a large rectory reached by a small automatic elevator, and on top of the whole a tiled recreation space with a tennis-court. The elevation, for which I cannot accept much responsibility is not very satisfactory, as rigid economy was necessary. Some large terra-cotta Gothic arches announce the church and school entrances. Above this are rectangular, perfectly plain, school windows, and at the top a frieze and cornice in terra-cotta. Here again the character of each part of the building shows the influence of what is behind it. Since the school, church, and rectory are more dissimilar than are the elements at St. Gabriel's, the problem did not resolve itself as well.

Shortly after this, I was engaged more personally in the design and construction of two other combinations: Our Lady of the Rosary at Yonkers and Our Lady of Victory opposite Clairmont Park on Webster Avenue in the Bronx. These each contain a playground, gymnasium in the basement, the church on the ground floor, and a school over the church. In each case I decided to take the bull by the horns, to consider the building a church, and to subordinate the evidences of the school as much as faithful adherence to all practical requirements of light and ventilation might permit. The Church of Our Lady of Victory is in Italian Romanesque with two side entrances that serve both church and school and a central entrance for the church alone. The vestibule, staircases, and entrance to the school hall occupy the front of the building, so that the different window-openings are not amiss, and the upper windows of the school that show on the side elevations do not clash with the general appearance of the building. See Plates XLI and XLII. It must be borne in mind that such problems are not sought, but are forced upon one by the need of economy. In a congested locality where land values are high they permit a tremendous saving—forty thousand dollars on the land alone in the case of St. Ambrose's, and doubtless a goodly percentage in a one-hundred-and-fifty-thousand-dollar building, as the foundations and roof of the church serve for the school and rectory as well.

The latest development of the combination building is the Fifth Church of Christ Scientist on the northwest corner of Madison Avenue and 43d Street in New York, A. D. Pickering, architect, Starrett & Van Vleck, consulting architects. The church, which has its entrance on 43d Street, covers less than a third of the lot area and occupies only five stories in the height of the building, which is some seventeen stories high. Thus the church has offices both beside and over it. The church itself is interesting and the design good. It extends in from the street about a hundred feet and is on the second floor, so that one enters a series of vestibules under the rising rear seats and then ascends by a main flight of steps on either side directly into the body of the church. There are other staircases in the corners that serve the balconies. The seating capacity is seventeen hundred. A Sunday-school room occupies the space beyond the entrance vestibules under the main body of the church.

The design of the 43d Street elevation comprises a high Ionic order along the front of the church proper. This has dignity and is characteristic of the neo-classic style often adopted by the Christian Scientists for their places of worship. As the remainder of this façade and the other street fronts are treated in a manner that is distinctly expressive of an office-building, the composition falls into the class that treats the separate portions in conformity with the several uses behind each part. It has been possible to do this and still preserve unity, because the classic order is not distinctly ecclesiastical. Indeed, many banks, public buildings, and even office-buildings are not dissimilar in their general effect from the entrance of this church. Unquestionably the problem would have been much less easy of solution had the dominant motive been that of an Episcopal or Roman Catholic church.

My own conclusion is that if two elements of such a problem are diametrically opposed, the need of unity in the composition entails eclipse of the lesser by the greater. As our civilization develops and such combinations become more numerous, it may be that the genius of American architecture, in which I have the greatest faith, will find a solution that shall give us a true expression of all parts and at the same time a beautiful whole.

The National State Bank of Elizabeth, N. J.

Dennison & Hirons, Architects

THE illustrations on the accompanying pages show an interesting solution of a somewhat difficult problem of a bank built on an inside lot, this lot being quite irregular in form. The problem which confronted the architects was the simplifying of this form to give a dignified and well-proportioned banking-room, and an exterior which would harmonize with its surroundings and yet give ample light and ventilation.

The question of lighting an inside lot is always a difficult one, as, in the event of a building being over one hundred feet long, the only means available for lighting are those through windows in the front and the rear and by means of a skylight.

The first thought was to develop the front of the building with a large central motif. This solution would have been practical in a large city where the surrounding buildings were of considerable height or monumental proportions. The town of Elizabeth has no high buildings and those surrounding this edifice were not over three stories in height; therefore, it can be readily understood that a building fifty-three feet wide, having a single central motif, would of necessity be at least sixty feet high. This solution of the problem would have developed in a design which would have proved overpowering for the surroundings and, in the estimation of its designers, would have been out of scale.

It is doubtful, with such a solution, if the light would have been as satisfactory as it has proved in the design executed. The adapted scheme shows a three-bay treatment which gives excellent light and has permitted of a motif of such proportion as to be in better scale and character with the surrounding buildings.

The same scheme of three windows was carried out for the rear elevation, which elevation, though several feet narrower, is hardly noticeable because of the false perspective obtained in the layout of the banking-room.

Recent banking laws in some States permit national banks to do a trust business, and most of these, in planning new buildings, provide for the development of a trust department. National banks in most of the smaller cities also handle a savings business of considerable proportions. Thus, the plans of these buildings should divide themselves into three divisions —a commercial banking business, savings business, and trust business.

In those departments devoted to the first and last of these, there are officers who are constantly in consultation with the public. It is desirable, therefore, that they be placed in a conspicuous location and that proper facilities for consultation in private be provided. The plans for the National State Bank provide well for this.

As one enters the banking-room a large open space for the use of officers is placed on either side of the public lobby. That on the right is for the commercial department and on the left for the trust department. Connected with the officers' space for the commercial banking department is a consultation room and president's room, and with that space for the trust officers there is connected a private consultation room and a ladies' room.

The rest of the public lobby is surrounded by the tellers of various departments who come in direct contact with the public. Adjoining the officers' space of the commercial banking department is the note teller, and following the cages of the paying and receiving tellers, between which there is an alcove for the use of ladies. This permits women to receive prompt service from the tellers without waiting in line in the public lobby, as from each of the teller's departments a wicket opens into the alcove.

It is the custom in many banks to have individual tellers' cages, in some of which the tellers do both receiving and paying work, while in others separate tellers are provided to do receiving and paying work. The practice followed, however, is very largely according to the ideas of different bankers.

In this building there is one receiving and one paying teller's cage, and in each of these there is room for three men to work. The chief argument in favor of a cage for each man is that it provides for this man complete control of the funds with which he is intrusted, whereas in cages where more than one man works, this cannot be done.

Adjoining the trust department, on the left of the public space, is the trust teller, the savings department, and the quarters of the statement clerk.

In the rear of the room is a large vault, nine feet by eighteen feet, which is divided into two parts for the bank's securities and its safe-deposit business. The vault has a sixteen-inch rectangular steel door and space for three thousand safe-deposit boxes. The other section of the vault is given over to tellers' chests and lock-ups for the protection of the bank's securities.

As it was desirable to have the banking-room appear as

large as possible, the usual practice of placing a directors' room in a gallery, thus cutting down the size of the banking-room, was overcome by the arrangement of a one-story extension in the rear which houses not only a directors' room and one or more conference-rooms but also a machine-room, in which posting-machines, which so often create an objectionable noise in the banking-room, are properly provided for.

The walls of the banking-room, treated in a series of arches and pilasters in travertine stone, surround a series of plaster panels, painted a neutral tone, slightly darker than the stonework. The decorative frieze above these and the coffered ceiling, treated in soft neutral tints, give a pleasing richness to the room, which was inspired by many of the noble precedents of the Renaissance.

The banking-screen and floor are of Napoleon gray marble, honed finish.

The question of artificial lighting is always an interesting one. In this instance the lighting of the banking-room is by means of indirect reflectors placed in the back of the cornice of the banking-screen. Attention may be called also to the use of the space on the right side of the banking-room, because of the irregularity of the lot. In this space there is an officers' toilet and a book vault, and over these a small locker space and toilet for women clerks. Then there is an open gallery in the rear of the banking-room over the vaults to be used for future working space.

The directors' room

The directors' room is kept extremely simple to offset the beautiful stone mantel and luxurious appointments. The decorative ceiling is kept very low in relief and finished in ivory tints. The leaded-glass windows are particularly appropriate, the small medallions embodied in the design illustrating previous edifices in which the bank carried on its business for more than a century past, it having been founded in 1812, thus making it one of the oldest institutions in the State.

The basement of the bank is conveniently equipped with a series of vaults for the use of the bank and other vaults for the protection of trunks or other articles that customers may leave in the bank's care. There is also a clerks' locker-room and toilet, lunch-room and kitchenette, as well as the usual provisions for mechanical equipment, heating-plant, etc.

Physical Fitness and Safety

WORKMEN in an up-to-date industrial plant must be fitted into their positions only after a rigid physical examination, conducted along the lines of an army or navy examination, declared A. A. Bureau, safety engineer, of Morris & Co., Chicago packers, speaking to-day before the Ninth Annual Congress of the National Safety Council in the Milwaukee Auditorium.

Mr. Bureau discussed the importance of the physical examination both as a safety measure and as an efficiency measure, and pointed out the advantages to be derived from it by both the employer and the employee. The physical fitness of a man for his employment should occupy first consideration in the mind of the modern intelligent employer, said Mr. Bureau.

"In the past we hired men on the basis of education or skill," Mr. Bureau continued. "To-day we realize that the physical condition is the greatest factor in the hiring and placing of men. A man's mental alertness, soundness of judgment, efficiency, and skill depend, to a large extent, upon his physical condition. A man in poor health is like a dirty machine; he cannot make his body respond quickly in the face of impending danger. Also, he cannot do his best work, regardless of how good the working conditions may be. As to safety, an abnormal man is never 100 per cent mentally or physically alert. He decreases the safety of his fellow workers. Accidents are costly misfortunes, both in human suffering and cold cash. As to efficiency, anything less than his best is a decrease in the production of a department in which a man is employed. The loss in production caused by the physical health of one man, when multiplied by many such men, soon can make a marked difference in the total amount of production for the plant. Therefore the physical condition of the employees is an important factor: first, in the reduction of accidents, and, second, in the cost of production. As time goes on there will be more emphasis laid upon the grading of workers according to their physical fitness to perform the work of the particular job for which they are hired. Our physical examinations in the future must have a broader scope."

Editorial and Other Comment

A Good Investment

ON other pages of this number are shown the prize-winning plans for model tenements recently exhibited in New York. A large debt of thanks is due to Mr. I. N. Phelps Stokes for his initiative in the matter, and faith in the possibility of solving the housing problem based on the safest of business considerations.

This competition has taken the question of building for the people out of the hands of the speculators and placed it with those who are willing and ready to look upon the question as a sound business man's proposition based on something beyond greed for immediate and exorbitant returns.

The facts would seem to demonstrate that these tenements can be built to rent for nine dollars a room or even less, and return a good profit on the investment.

That some of them are going to be built is already an established fact, thanks again to Mr. Stokes.

Once the good work is started we may look for a regular boom in new construction in this field, and the need is becoming more acute every day.

The architects of these plans have demonstrated that such tenements can be built to yield a safe and continuing profit, and a number of large and experienced building organizations are ready to begin on an extensive scale the moment funds are assured.

If New York makes headway in relieving its own intolerable housing congestion and shows that it can be done to yield a handsome return, we shall look for a wholesome and sorely needed building development all over the country.

It would appear that there is no longer any possible excuse for the existence of the profiteering tenement landlord, and that his days are numbered.

Bringing Architecture and the Related Arts Closer Together

THE exhibition of the Architectural League in New York this year was more than ever a marking of the tendency to affiliate more intimately with the arts of the craftsmen in related fields. We used to go to look chiefly at photographs and plans of buildings; now we go to look at these crowded together and surrounded by about everything that can be put either in or on a building. The exhibition of the little model interiors by the mural painters was a new and interesting departure and will no doubt become quite a feature of future shows.

To the casual visitor who was trying to find what is what in architecture the show was a bit confusing, for he was rather lost in a maze of things that he suspected belonged together, but couldn't always tell where to begin the discovery of how and why.

We are, however, in entire sympathy with any possible efforts that will bring the dear public to a realizing sense of what's what in decoration, and we enjoyed the League show in many ways, and appreciate how much energy and time and thought went into its arrangement.

It is a pity that we cannot have a permanent exhibition of the kind where things can be arranged without crowding and with places set apart for each kind of exhibit, all the crafts included.

The League is a great power for good and its shows deserve a much larger attendance and a more liberal support on the part of the public than they receive.

There is no doubt that the League is very much alive and that in its opening the way for a friendly association with those concerned commercially in the better furnishing of houses after they are built, it is helping to a wider knowledge of the fact that bad taste can only be cured by the getting together of all concerned in making the things that go to furnishing the house. The League's work in this direction is a big asset in furthering the good work that is being done by our museums.

If the manufacturers can be persuaded that good craftsmanship pays better than the awful things that we have been accustomed to, there is hope for us as a nation!

We are constantly confronted with the statement that we are years behind Europe in our industrial arts, and "pity 'tis, 'tis true," but the League is on the right track to change all this. More power to them!

"Architecture" as a Reference Library

THE annual index of ARCHITECTURE is now ready for distribution to subscribers who wish to bind their numbers, and will be sent upon request.

The past year was an especially interesting one in many ways, and the variety of material presented in the numbers from January to December, 1921, gives better than anything we might say an idea of the wide field covered and the high quality of most of the architecture that America is developing, both in public and domestic buildings.

We are all inclined to look with a critical eye upon new developments and rightly so, for only by eternal vigilance may we hope to awaken the public to the fact that we have developed a native architecture and that its future lies largely in their hands.

The public is not blind as some would have us think; on the contrary, it is keen of vision, but, the vision is too often focussed badly and overlooks the more significant things that make up the material upon which to base a judgment of our architecture in general.

The monumental building in the way of a great public institution was splendidly represented in Mr. Cass Gilbert's noble Library at Detroit and Mr. James Gamble Rogers's

Harkness Memorial at Yale University has been recognized as a really great achievement in modern collegiate gothic.

Mr. Magonigle's design for the Kansas City war memorial solved a very difficult problem in a distinguished way, and Mr. Goodhue's bold and highly original design for the Nebraska State Capitol gives promise of a new, and we believe, desirable departure in the designing of civic buildings in general.

Certainly there is no lack of originality combined with great knowledge in such buildings as these, nor any cause to complain that our architecture is lacking in native initiative.

We may all take pride in such achievements, but we must not overlook at the same time the high quality of our domestic architecture. Our modern city residences have shown large improvement in the matter of design, and, as for our country homes, many of them are far ahead of anything in Europe.

Any one who wants to see where we are ahead of other countries in our domestic architecture needs only to compare the plans of a well-designed American house with its English equivalent, for instance. And we all know that there is nothing anywhere in the world to compare with our wonderful business buildings. The fact is, we are better planners in everything we build.

Our readers will always find in the twelve numbers of the year examples of good architecture from all over the United States, together with many articles of an informing and helpful character.

If you should ask us to tell you what Architecture has been doing, therefore, we should refer you to this or any other volume index of recent years to answer for us.

The Cost of Labor

THE following are preliminary figures from the Department of Commerce, Washington, showing the percentage which the amount paid to each labor group bears to the total labor cost of a six-room house:

TOTAL LABOR COST, 100 PER CENT

TRADE	FRAME HOUSE	BRICK HOUSE
Carpenters	49.6	32.2
Bricklayers	6.2	21.5
Hod-carriers	2.2	6.7
Plasterers	7.9	8.8
Plumbers	8.7	7.6
Electricians	2.6	2.5
Painters	10.0	6.3
Common laborers	6.3	9.9
All others	6.5	4.5
Total	100.0	100.0

These averages were constructed from reports covering a large number of six-room brick and frame houses throughout the country.

The relation of the amount paid to the various groups to the total labor cost varies according to the types of construction prevailing in the various localities; however, these averages give a fair view of the general distribution of labor costs.

The Dallas Architectural Club held its first annual exhibition of Texas architecture and allied arts in the ballroom of the Jefferson Hotel in February.

Officers and Committees, Texas Chapter A. I. A. for 1922

Officers—Herbert M. Greene, President, 620 North Texas Building, Dallas; Carl V. Seutter, Vice-President, 424 Moore Building, San Antonio; Clarence C. Bulger, Secretary, 4419 Junius Avenue, Dallas; Alfred C. Finn, Treasurer, 202 Foster Building, Houston. Executive Committee—O. J. Lorehn, Houston; H. A. Overbeck, Dallas; Roy E. Lane, Waco. Membership Committee—H. A. Overbeck, Chairman, Dallas; Professor Samuel E. Gideon, Austin; Carl V. Seutter, San Antonio; A. C. Finn, Houston. Legislative Committee—D. F. Coburn, Chairman, Dallas; Roy E. Lane, Waco; Professor F. E. Giesecke, Austin. Publicity Committee—Ralph Bryan, Chairman, Dallas; Maurice J. Sullivan, Houston; Ralph Cameron, San Antonio. Civic Improvement Committee—Chas. D. Hill, Chairman, Dallas; Carl G. Staats, Fort Worth; Herbert S. Green, San Antonio; O. J. Lorehn, Houston; Otto H. Thorman, El Paso.

Book Reviews

A HISTORY OF ARCHITECTURE ON THE COMPARATIVE METHOD. For Students, Craftsmen, and Amateurs. By Sir Banister Fletcher, Architect, F. R. I. B. A., F. S. I., F. R. G. S., F. R. S. I. Sixth Edition, Rewritten and Enlarged, with about 3,500 Illustrations. Charles Scribner's Sons, New York.

This new edition of a book unrivalled in its field differs from former editions published under the joint names of the late Professor Banister Fletcher and Banister F. Fletcher, in that it has been entirely rewritten by the son, whose name it now bears alone. It has been recast from beginning to end, and much new material added. Many of the new descriptions are the result of personal observations "from ancient Troy to modern Chicago." "In Egypt I have studied the Pyramids, Temples, and Tombs from Cairo to Khartoum. I have made repeated pilgrimages to the mainland and isles of Greece, and to the Greek colonies of Asia Minor; besides exploring the Palace of King Minos in Crete. In traversing Italy I have made sojourns in Rome, in the hilltop cities and the towns of the plains; while I have visited the palace ruins at Spalato on the Adriatic, which reveal the majestic might of Roman rule. In the romantic island of Sicily I have noted how faithfully the varied buildings reflect the many dynastic changes. In North Africa I have studied the ruins of Timgad, Tebessa, and Carthage. I have twice visited Constantinople and examined St. Sophia and the numerous Byzantine churches converted into Mosques. In Palestine I have gone down from Jerusalem to Jericho, through Samaria and Nazareth to Damascus and the great Roman temples at Baalbek in Syria. I have studied the architecture of Spain from Burgos in the north to Cordova in the south, and have made many expeditions to the fair land of France, with her magnificent heritage of Gothic cathedrals; to Belgium with her remarkable town halls; to the canalized cities of Holland, with their stately burgher houses, besides repeated visits to all our English cathedrals and to many castles, mansions, and manor-houses throughout England. I have also been introduced in America to the last word in domestic architecture, and to that steel-frame modernity known as the 'skyscraper.'"

Changes include consecutive numbering of text pages and illustrations, the redrawing of many illustrations and rearranging, adding many new ones in line with recent discoveries, and extending the text and making it much more readable in the way of greater smoothness and fulness of description.

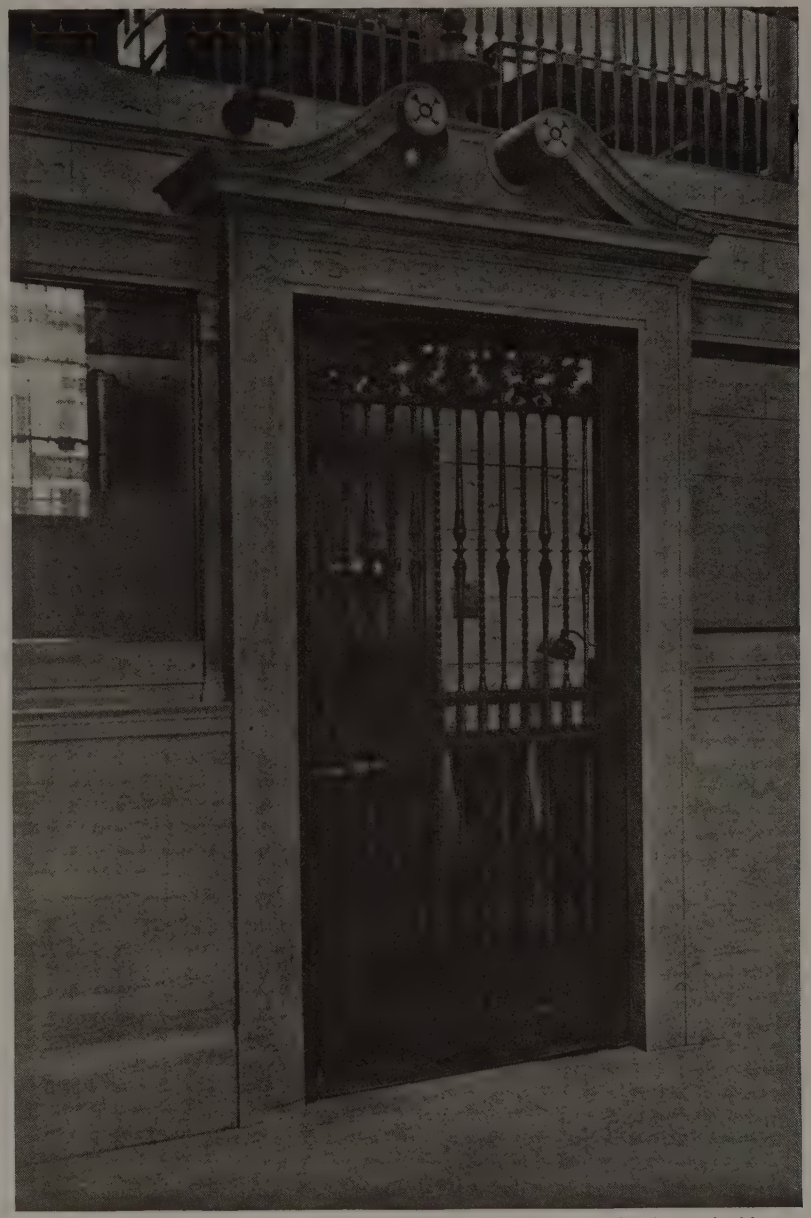
This has always been a great book, an invaluable reference for the architect, the student, and lover of the arts, and in its new form it will be more than ever one of those books that will be needed by every one wishing a readable, comprehensive and complete history of architecture.

The author has wisely refrained from doing the familiar thing of the English traveller. Instead of dismissing the whole subject of American architecture with a cynical reference to our tall buildings, he has devoted a brief chapter to it of a merely outline descriptive nature, saying that "The architecture of that great continent, with all its daring originality and with its many ramifications, would require a volume to itself. Houses, large and small, are among the most satisfactory buildings in both town and country. House plans often show great originality."

The many illustrations, drawings of details, and photographs—there are fifteen hundred added to this new edition—add immensely to the interest of the text, enabling the readers to look at many famous buildings referred to and to follow the author's comments on significant details.

Many have been waiting for and will welcome this new edition. The book has been out of print for some time, and the publishers have been unable to supply the many requests for it that have come to them in the past year. With its nearly 1,000 pages this remarkable book is not only interesting reading, but an encyclopædic reference for the library, to be consulted on all occasions.

MAIN ENTRANCE.

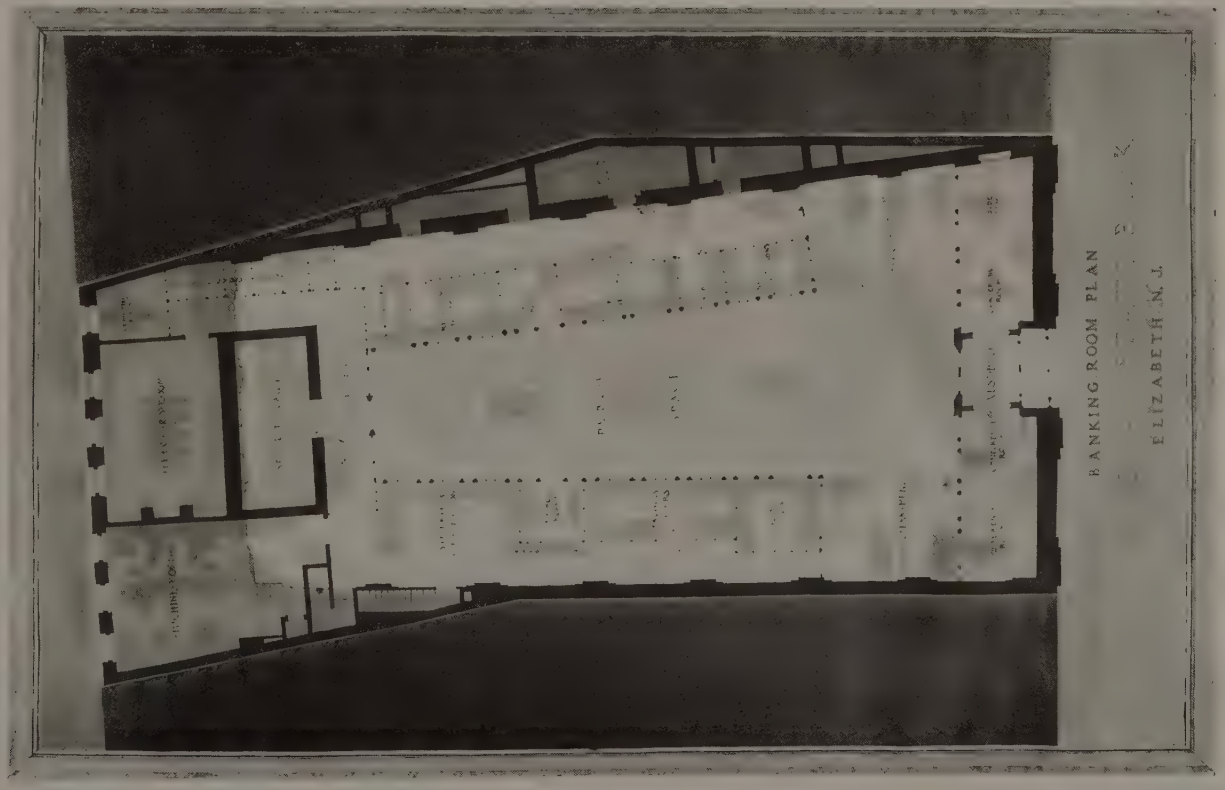


DOORWAY IN BANKING–ROOM.

Dennison & Hirons, Architects.

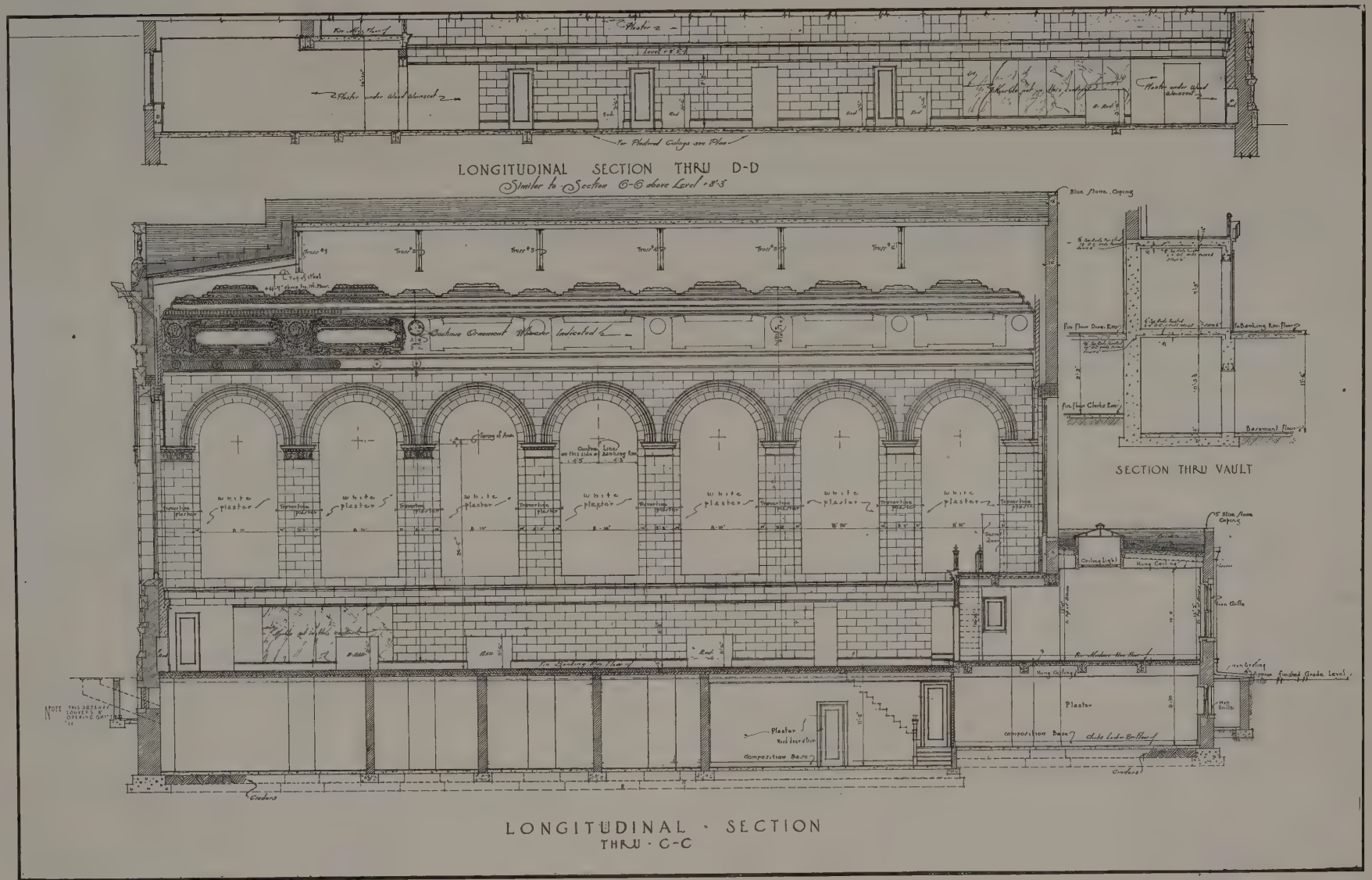
NATIONAL STATE BANK, ELIZABETH, N. J.

BANKING-ROOM.



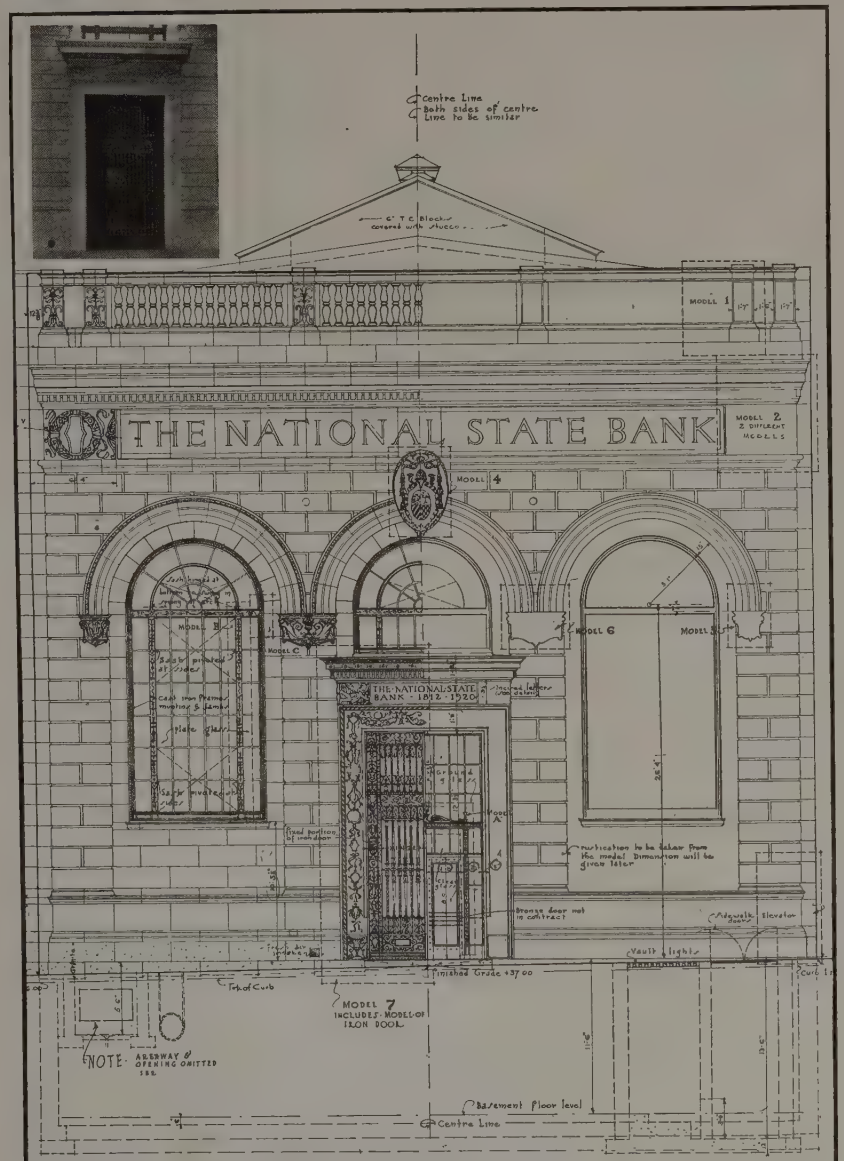
NATIONAL STATE BANK, ELIZABETH, N. J.

Dennison & Hirons, Architects.

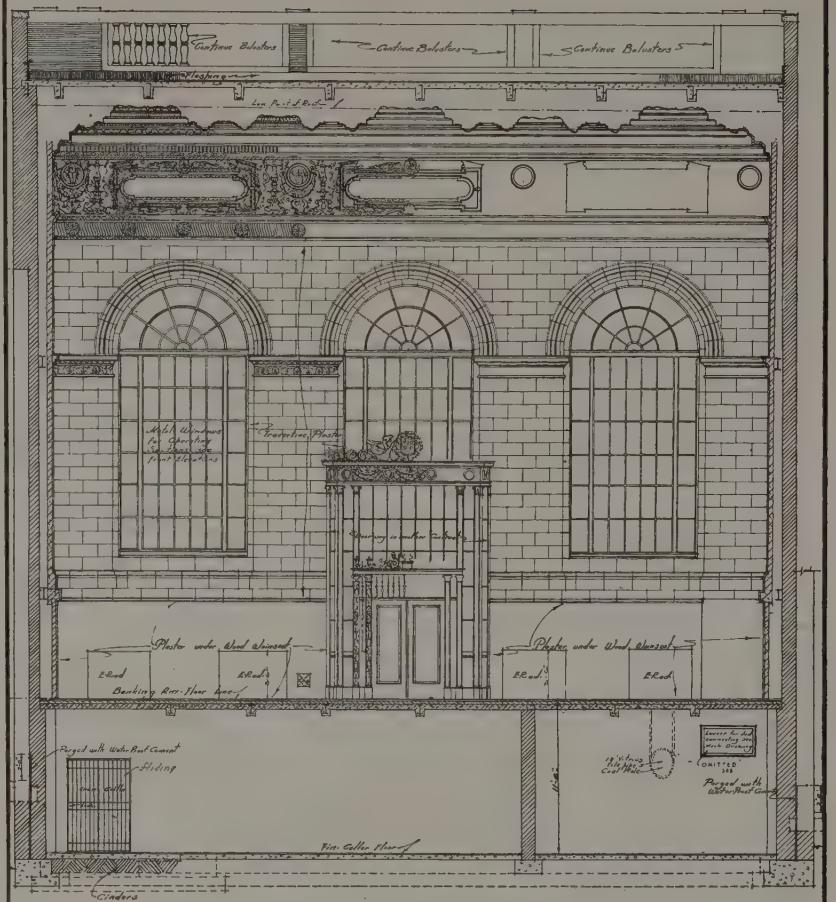


NATIONAL STATE BANK, ELIZABETH, N. J.

Dennison & Hirons, Architects.



FRONT ELEVATION



TRANSVERSE SECTION B-B

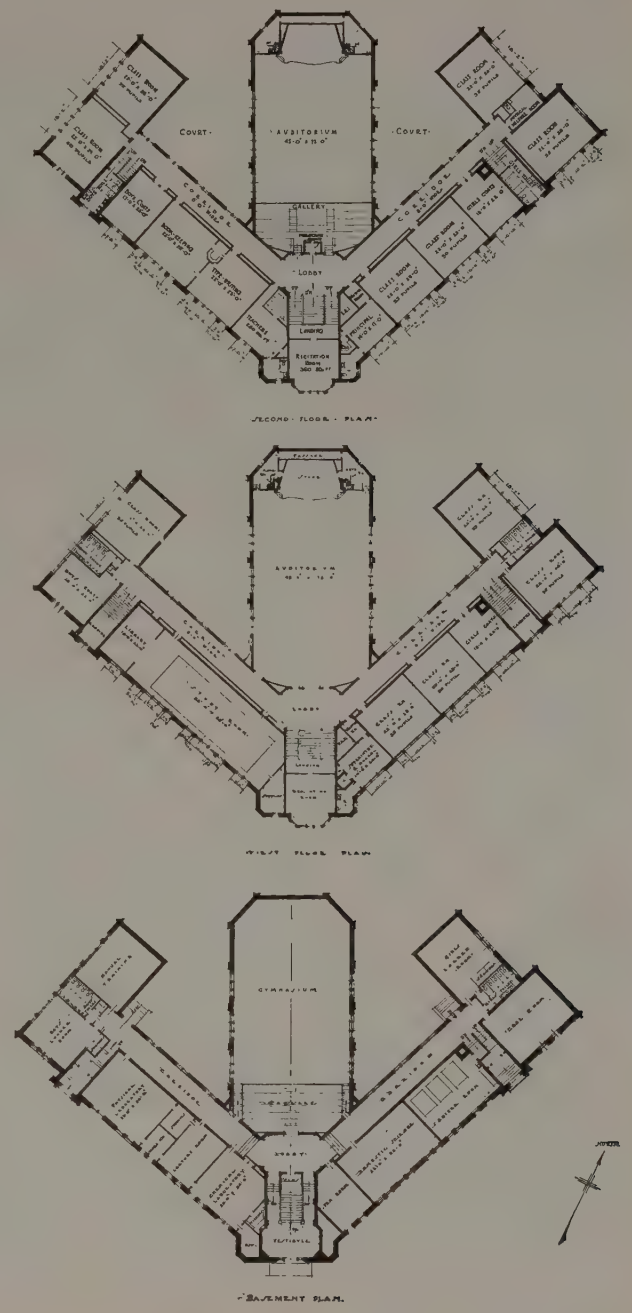
NATIONAL STATE BANK, ELIZABETH, N. J.

Dennison & Hirons, Architects.

HIGH SCHOOL, PELHAM, N. Y.

Tooker & Marsh, Architects.

ENTRANCE DOORWAY.



PLANS.

HIGH SCHOOL, PELHAM, N. Y.

Tooker & Marsh, Architects.

HALL AND STAIRWAY.

AUDITORIUM.

HIGH SCHOOL, PELHAM, N. Y.

Tooker & Marsh, Architects.

CHURCH AND SCHOOL OF OUR LADY OF VICTORY, NEW YORK.

John V. Van Pelt, Architect.

W. Stuart Thompson. Del.

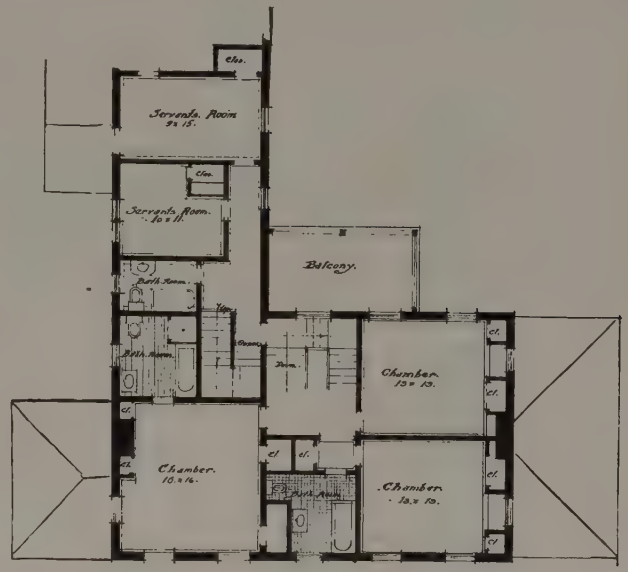
CHVRCH AND SCHOOL
OF OVR LADY OF VICTORY N·Y·C·

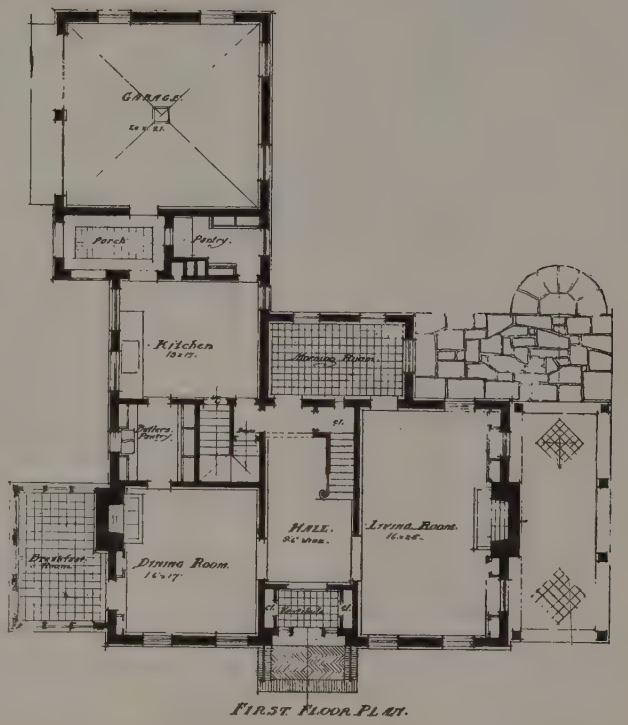
DETAIL OF CHURCH DOORWAY.

John V. Van Pelt, Architect.

HOUSE, HARRY TYLER SMITH, HARTFORD, CONN. Smith & Bassett, Architects.

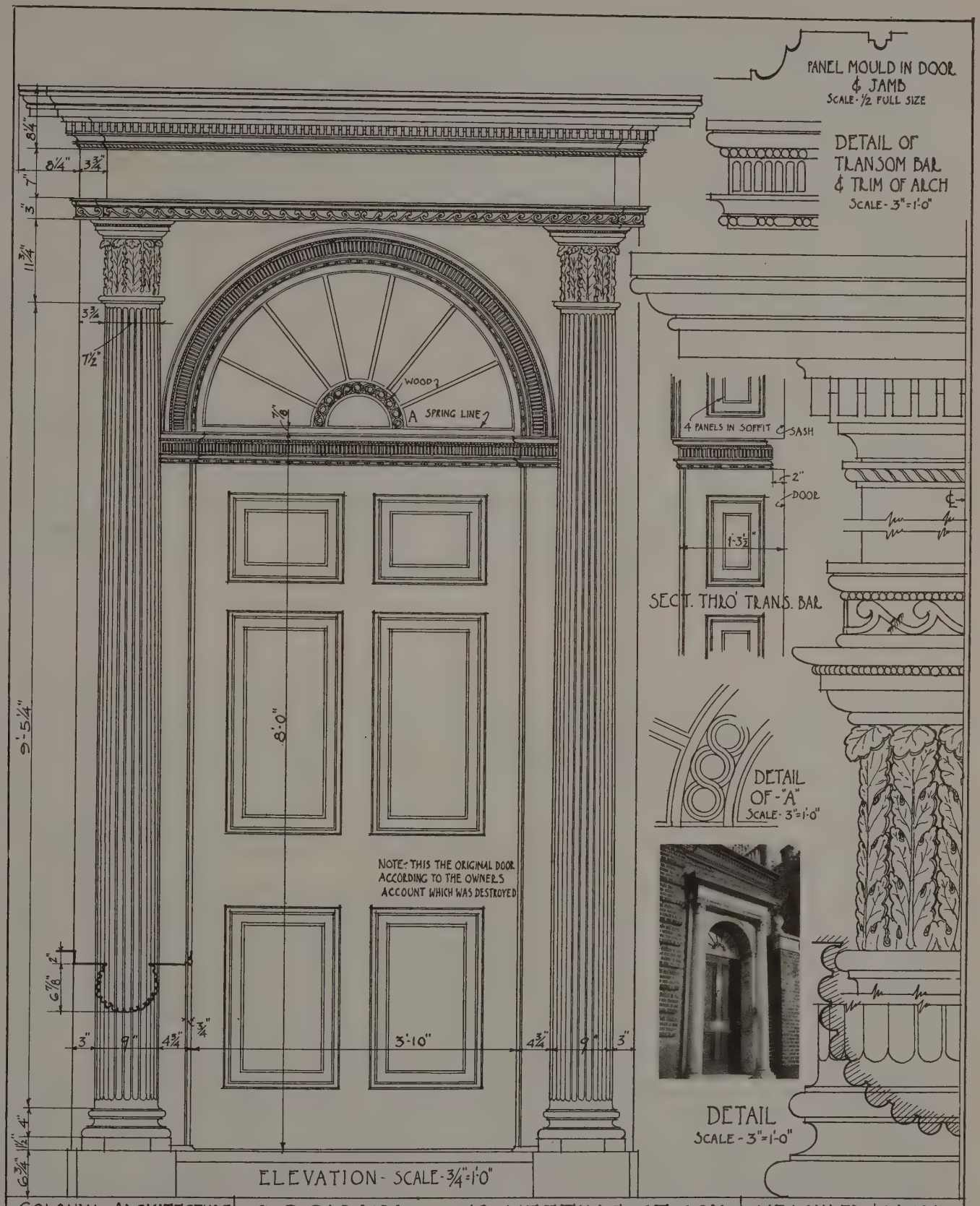
HOUSE, HARRY TYLER SMITH, HARTFORD, CONN.





FIRST FLOOR PLAN.

Smith & Bassett, Architects.



COLONIAL ARCHITECTURE of the CAROLINAS	DOORWAY - 18 MEETING ST., SOU. DATE - ABOUT - 1804 CHARLESTO - S.C.	MEASURED & DRAWN by J. A. ALTSCHULER

STORE AND APARTMENTS, 1145 CONNECTICUT AVENUE,
WASHINGTON, D. C.

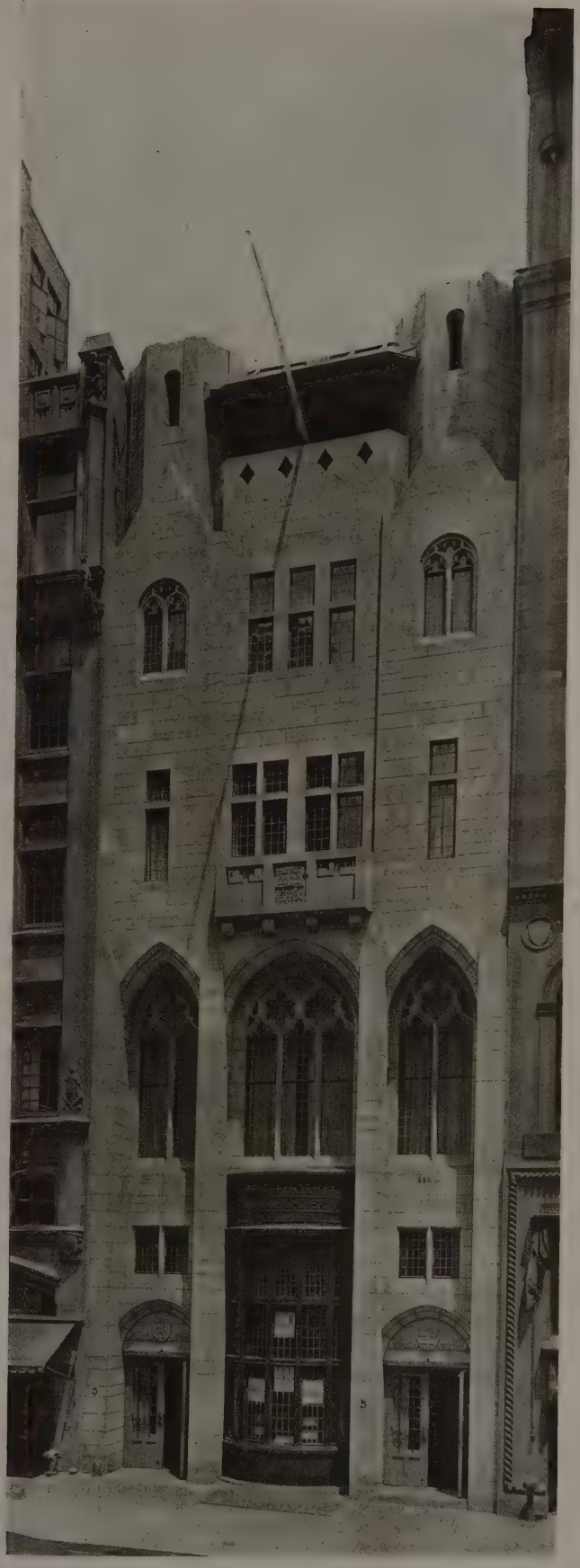
STORE AND APARTMENTS, 1803 CONNECTICUT AVENUE,
WASHINGTON, D. C.

George Ray, Architect.

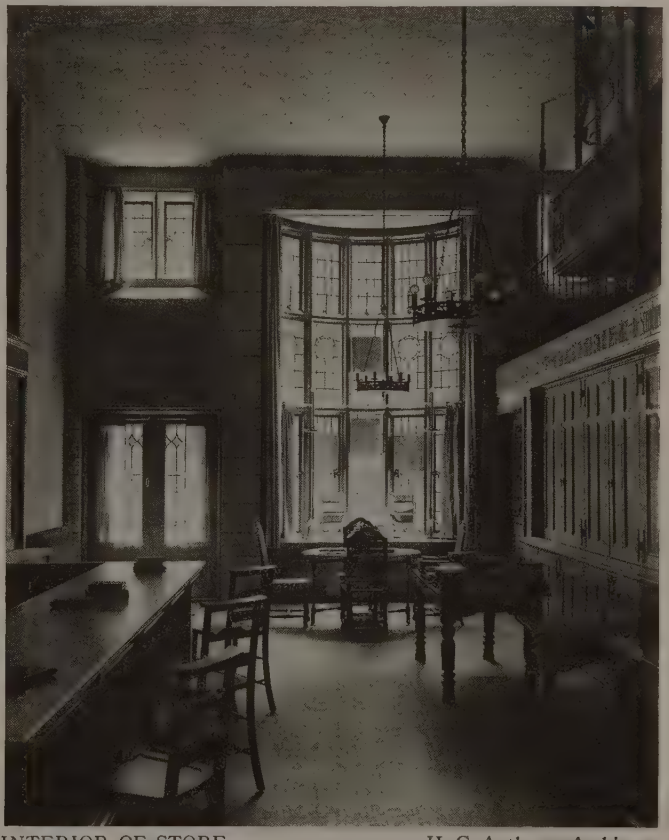
CARPENTER BUILDING, 1223 CONNECTICUT AVENUE, WASHINGTON, D. C.

BURROUGHS BUILDING, 724 17th STREET, WASHINGTON, D. C.

George Ray, Architect.

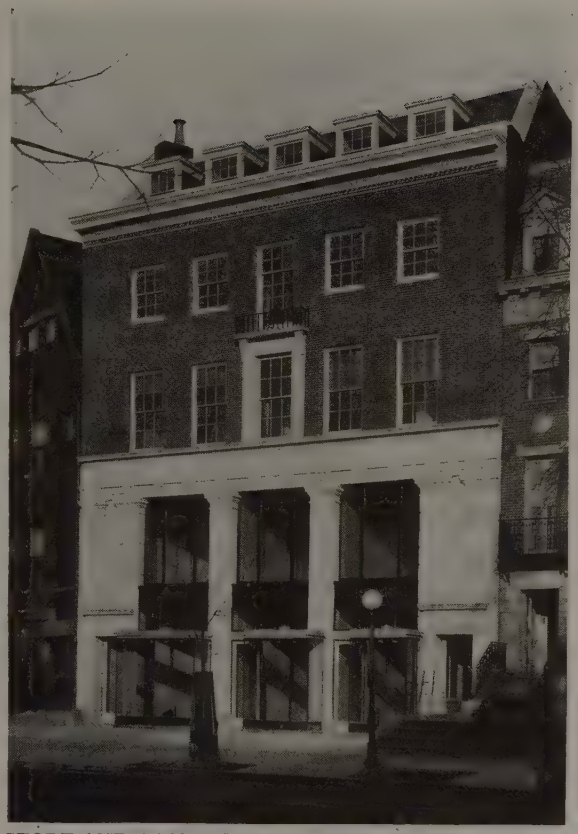


AUDITORIUM.

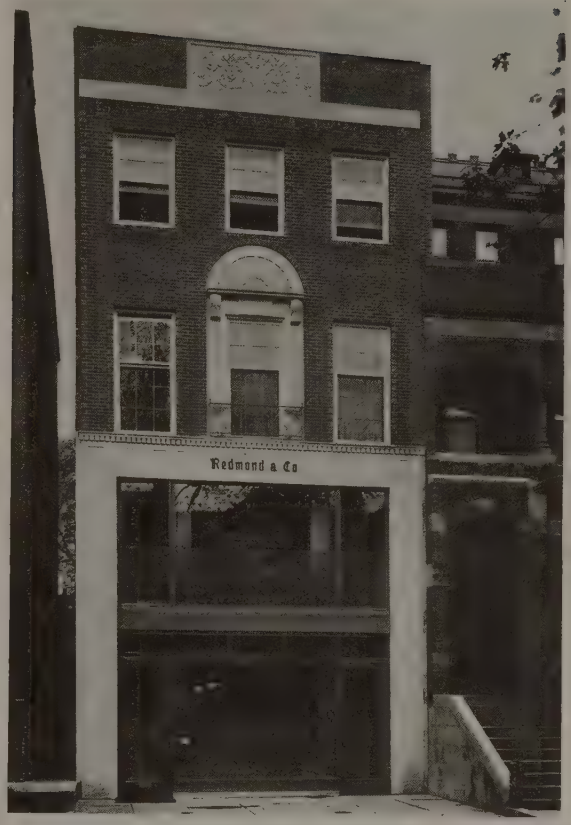


INTERIOR OF STORE. H. C. Anthony, Architect.

BIBLE HOUSE, 5 EAST 48th STREET, NEW YORK.

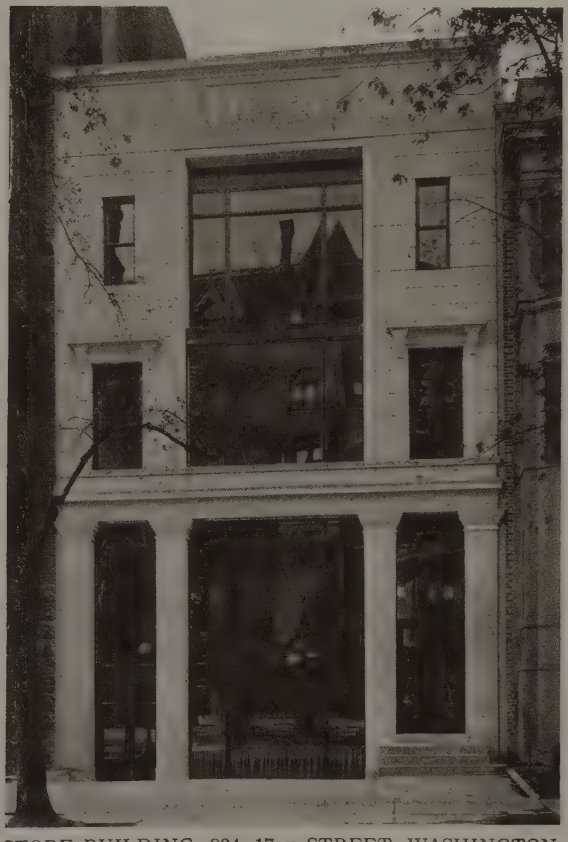


STORE AND APARTMENTS FOR MRS. MAUD LEMON, WASHINGTON, D. C.



REDMOND BUILDING, 1516 K STREET, WASHINGTON, D. C.

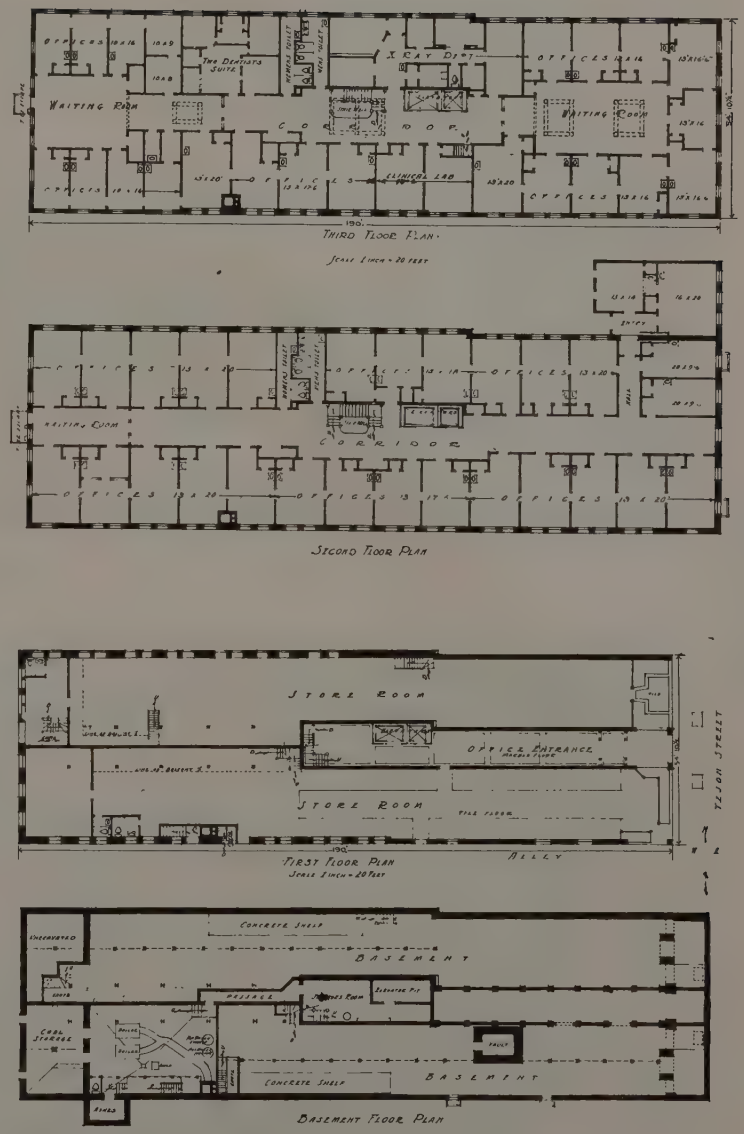
DEWEY BUILDING, 1747 RHODE ISLAND AVENUE, WASHINGTON, D. C.



STORE BUILDING, 804 17TH STREET, WASHINGTON, D. C.

George Ray, Architect.

FERGUSON BUILDING, COLORADO SPRINGS, COLO.



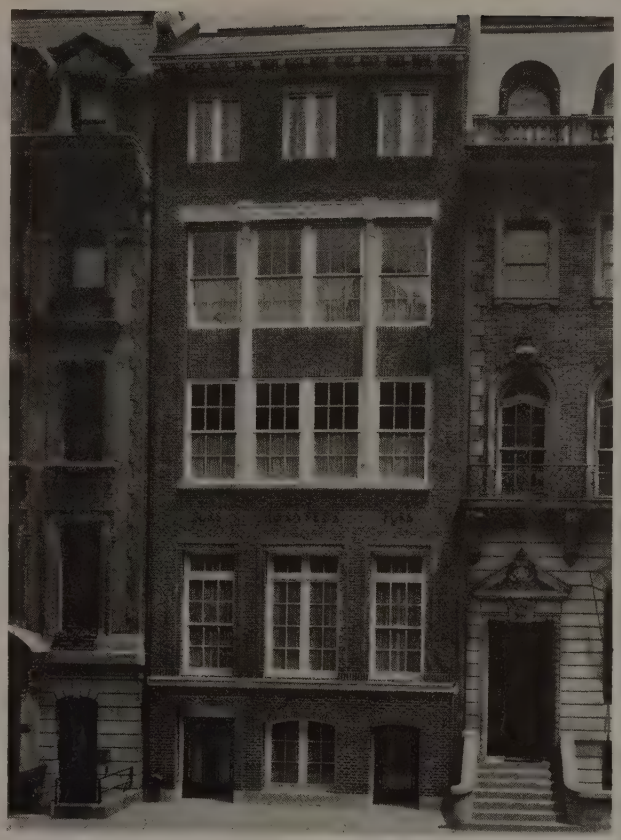
THIRD FLOOR PLAN.
SCALE 1 INCH = 20 FEET.

SECOND FLOOR PLAN

FIRST FLOOR PLAN
SCALE 1 INCH = 20 FEET

BASEMENT FLOOR PLAN

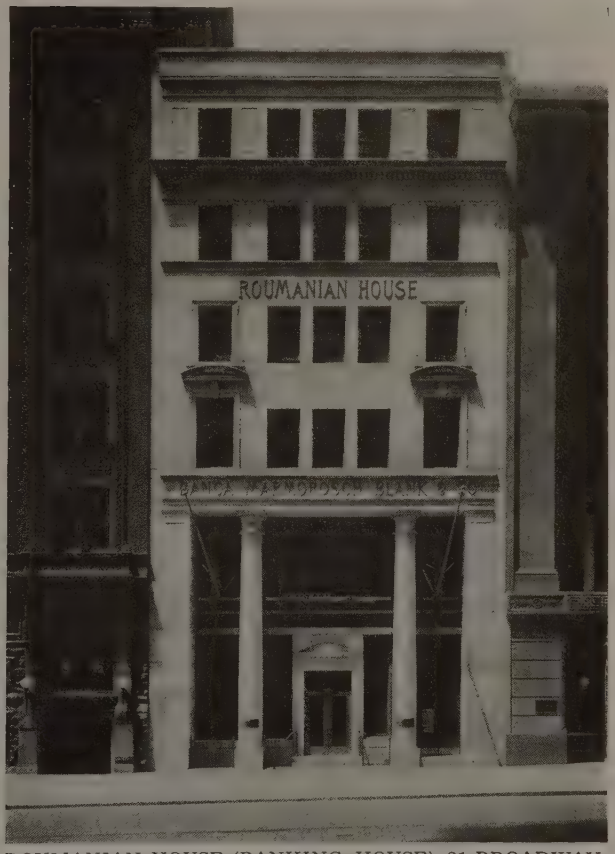
MacLaren & Hetherington, Architects.



HORNPECK BUILDING (RETAIL SHOP), 59th STREET, NEW YORK. Augustus N. Allen, Architect.

AVEDON BUILDING (RETAIL SHOP), FIFTH AVENUE, NEW YORK. Harry Allan Jacobs, Architect.

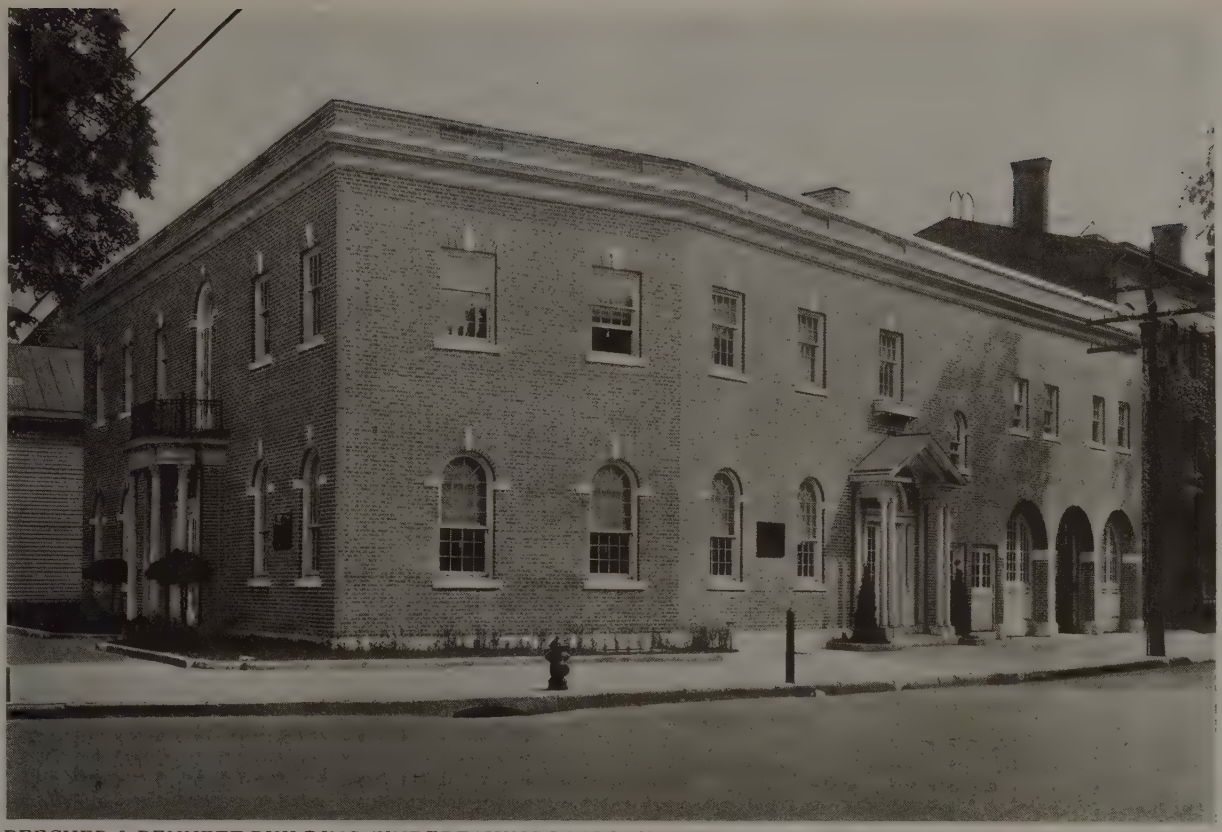
POST & FLAGG BUILDING (BANKING–HOUSE), BROAD STREET, NEW YORK. Geo. B. Post & Sons, Architects.



ROUMANIAN HOUSE (BANKING–HOUSE), 31 BROADWAY, NEW YORK. Irving S. Cobb, Architect.

DURYEA BUILDING, WASHINGTON, D. C.

OFFICE-BUILDINGS FOR B. F. SAUL, WASHINGTON, D. C. George Ray, Architect.



BEECHER & BENNETT BUILDING (UNDERTAKING PARLORS), NEW HAVEN, CONN. Charles Scranton Palmer, Architect.

STORE, FISK RUBBER CO., ALBANY, N. Y. Fred T. Ley & Co., Inc., Architects and Engineers.

Art Gallery, Henry Reinhardt & Son, Fifth Ave., New York. John H. Duncan, architect.

Primrose house, East 52d St., New York. Ekin Wallick, architect.

Announcements

Felix Rasulo, architect, has moved from 139 Beech Street to 520 Proctor Building, Yonkers, New York.

Langley & Howland, architects, announce their removal from 118 King W. to their new offices in the York Building, northwest corner King and York Streets, Toronto.

We notice the change in the corporate name of Moline Heat to the H. W. Nelson Corporation, manufacturers of heating-ventilating equipment, Moline, Illinois. This company will continue under the same management to manufacture and sell the Univent and Moline Heat, but as two distinct and separate products. They solicit your future patronage and thank you sincerely for the many favors you have shown them in the past. H. W. Nelson is the president.

Samuel A. Hertz, architect, 15–17 West 38th Street, announces that his telephone number has been changed to Fitz Roy 4013.

We have received from the Trucson Laboratories, Detroit, Michigan, a valuable pamphlet on the "Science and Practice of Integral Waterproofing."

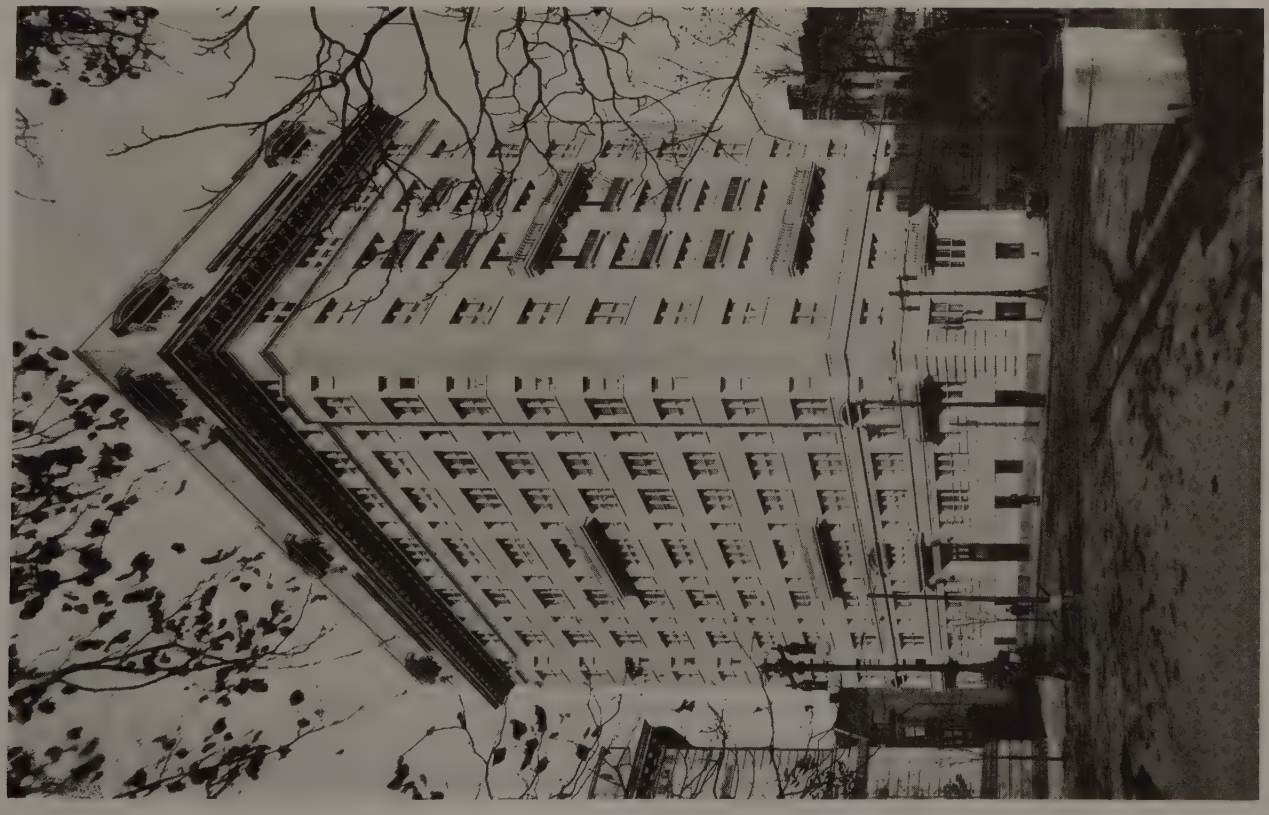
Architects will be glad to receive a copy of the attractive little pamphlet issued by the Hess Warming and Ventilating Co., of Chicago, showing illustrations of the Hess sanitary medicine-cabinet and lavatory mirrors.

Our readers will be interested in the new "Wodack" combination portable electric drill and grinder, which has been recently developed. It is used as a portable electric drill and also as a portable electric grinder. The new tool fills a need in those shops and factories where hand-drilling and grinding operations are performed, yet not enough of either to warrant the purchase of two separate machines. In designing this tool it was necessary to so construct it that by the use of one motor it would have the desired speed for drilling as well as the proper speed for grinding.

Haig's Etchings at the New York Public Library.—The Prints Division of the New York Public Library has arranged an exhibition of the etchings of A. H. Haig, who died in August last year, and of whose work the library has ninety-nine etchings and six drawings. The exhibition will be on view in the Stuart Gallery to the end of March.

Haig's work has, primarily, the double interest of architecture and locality. Himself an architect, he brought to the delineation of buildings an appreciation of structural qualities, and of a balance of parts that sets decoration into its proper place, without undue emphasis on sculptural details. But in his pencil studies he often drew such details with scrupulous care, studying his subject from various points of view before beginning to etch it. Haig's name is especially associated with ecclesiastical architecture. He delineated the cathedrals of Chartres, Amiens, Upsala, Barcelona, Bruges, Toledo, Seville, Rheims, Palermo, Canterbury, Peterborough, and Ulm, as well as Notre Dame of Paris, Westminster Abbey, Kirkstall Abbey, and St. Mark's, Venice. He often pictured the solemnity and magnificent grandeur of cathedral interiors, but, to cite Lewis Hind: "Sometimes he darts off to a scene of light and color and bustle, anxious over the composition rather than the architecture, as witness the Cairo series."

McIlvain & Roberts, Architects.



APARTMENT HOUSE, 135 SOUTH 18TH STREET, PHILADELPHIA, PA.

Construction of the Small House

By H. Vandervoort Walsh

Instructor, Architectural School, Columbia University, New York

ARTICLE XVII

LABOR-SAVING DEVICES FOR THE HOME

THE DEMAND

THE need for labor-saving devices to help in housekeeping is more evident in the small house than in the larger house, although the cost of such machinery often prevents its installation in the former, whereas in the latter it is more to be found, since the person who builds a large house is apt to have more funds to draw upon. Yet labor-saving devices really belong to the small house, for the large house is still run by the servant, but the small one is kept by the lady of the house. She rightly objects to working in the old-style kitchen, which was very large and ugly, and the useless up-keep of many rooms that are really not needed is not to her liking, so that in practice the small house is in a way a labor-saving device in itself, since it reduces the amount of house to be kept, and makes the kitchen small and attractive. Then, frankly, labor-saving machinery is more becoming to this house which is in itself designed to save labor, and money wisely spent upon such devices is by no means out of proportion to the cost of construction, even if in direct comparison it shows a larger percentage ratio to the building cost in the small house than in the large house.

The fundamental needs which demand mechanical power in place of brawn can be classified into the following:

(*a*) Machines for cleaning.
(*b*) Machines for preparation of food.
(*c*) Machines for moving objects about the house.
(*d*) Machines designed to watch over various household cares.
(*e*) Machines to simplify and make pleasant the toilet.

But before such machines could be developed to a point of usefulness, some source of power had to be found which could be used by the average family. This to-day is electricity. If the house cannot tap in on some public generating plant, then it is not at all too costly a proposition to install a private generating plant run by a gasolene-engine. The rapid spread of public-service wires throughout the country and the increasing demand for private generating plants is evidence that where money permits, the people are ready to take advantage of the power of electricity to reduce the labor of keeping house. This electric energy which is being more widely distributed has called forth invention after invention of labor-saving machinery. It would not be hard to compile a list of some five hundred or more such machines, good, bad, and indifferent. Pick up any magazine and glance through the advertisements, and a fairly comprehensive list of housekeeping machines can be made, or look through some one of the popular scientific magazines and page after page will be found devoted to new inventions along this line. For example, in the latter, here is a small list made from a page of one of these magazines: A combined electric toaster and heater, a special brush on a long wire handle for cleaning the drain-pipe of the refrigerator, an electric clothes-wringer which has rollers soft enough not to break the buttons, a combined crib and wardrobe, the latter being under the mattress, a dust-pan which is held in position by the foot, a counterbalanced electric light that can be hung over the back of a chair and an electric water-heater to fasten to the faucet.

MACHINES FOR CLEANING

Under this classification ought to be included machines which reduce the need of cleaning, for they accomplish the same results, but in a negative way.

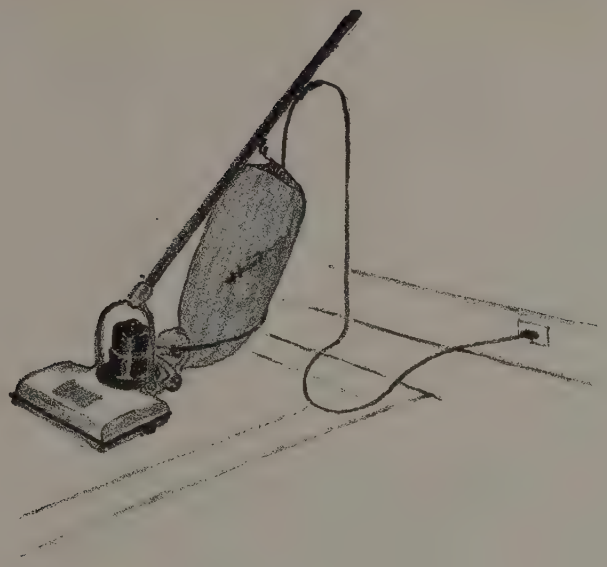
One of the dirtiest and meanest jobs about the house is the sifting and shovelling of ashes from the furnace. The light ashes are bound to be tracked through the house on the feet, or float in the rising warm air to the rooms above, while the sifting process is going on. The continued need of removing ashes and putting more coal in the furnace to make more ashes often disgusts the housekeeper so much, that the apartment-house looks very attractive, for here this dirty work is done by the janitor.

Now the modern oil-burner, suitable to heat the furnace of a small house, represents a real labor-saving device, because it eliminates this problem of the ashes, but it requires electric power to make it practical, since a mechanical movement is necessary to properly atomize the oil for burning. Looking impartially at the latest inventions along this line that are now on the market, one cannot help but admit that they are highly desirable from the labor-saving point of view, if not always from an economical one. The easy control of the fire of one of these oil-burners is admirable. In mild weather the flame can be turned down quite low, burning perhaps only twelve gallons of oil in twenty-four hours, but if the weather suddenly becomes cold the flame is easily advanced to meet the conditions. No extra shovelling of coal is required in cold weather, and the worry of banking the fire in the evening is eliminated.

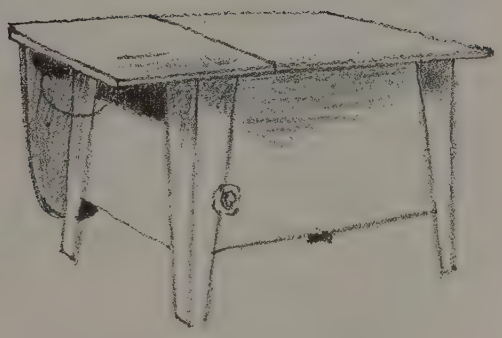
But one must not forget the various improvements which have been made in coal-burning furnaces to eliminate the ash and coal shovelling labor as much as possible. There is the self-feeding boiler, which has a large magazine of coal which can be filled once a day and which automatically supplies the fire with fuel as it burns up. Then, too, there is the large ash-pit in which the ashes may accumulate for some time before removal is necessary, or the revolving ash-collector sunk into the floor below the furnace into which the ashes may be dropped and taken out in cans.

For cleaning purposes, one must recognize the enormous grip that the vacuum cleaner has had on the popular mind, and nearly every housekeeper would own one if money permitted it. Perhaps the installation of pipes throughout the house for a central cleaning-machine in the cellar is a little too expensive for the small home, but certainly electric

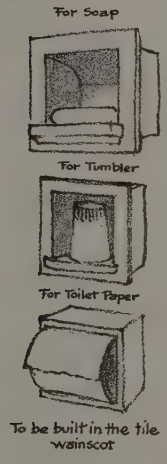
(*Continued on page 96.*)

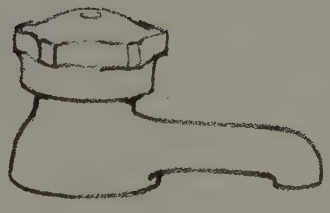


THE PORTABLE VACUUM CLEANER

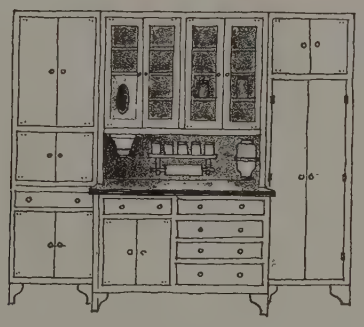


DISH WASHER AND TABLE

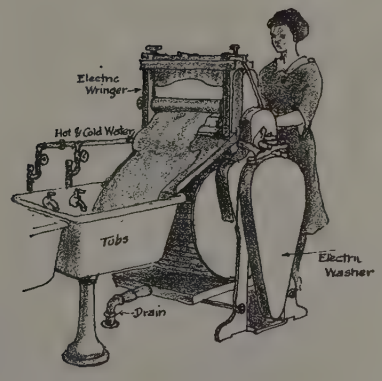


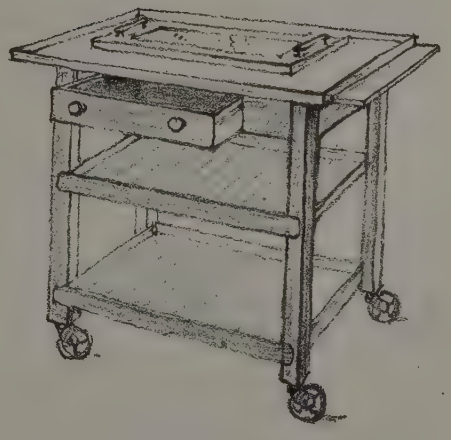


White Enameled Faucet



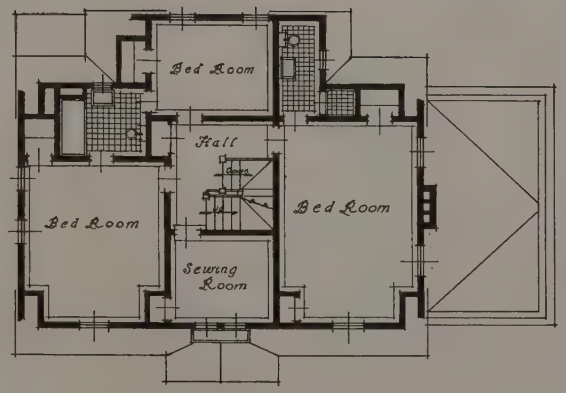
— KITCHEN DRESSER OF WHITE ENAMELED — STEEL —





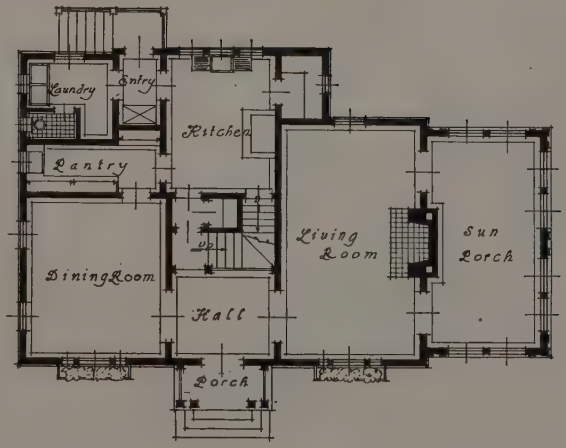
— A TABLE SERVICE WAGON —

ENTRANCE DETAIL, HOUSE, GEORGE GIBSON, MT. VERNON, N. Y.



Second Floor Plan

Scale 1/8 inch = 1 foot



First Floor Plan

S. A. Guttenberg, Architect.

HOUSE, GEORGE GIBSON, MT. VERNON, N. Y.

S. A. Guttenberg, Architect.

(*Continued from page* 92.)

base plugs should be located in the rooms to which the portable type of cleaner can be attached. Such outlets should be placed in central positions in order to permit the moving of the machine to all parts of the various rooms.

The laundry should be equipped with electric outlets to which an electric washer can be plugged. These machines usually require about 300 watts. Electric irons require about 600 watts. If laundry labor-saving devices are to be bought as a complete equipment, a small fortune can be spent upon them, for there are electric wringers, electrically driven mangles for ironing flat work, a special ironing-board with electric-iron attachment and electrically heated clothes-driers. A plan of a well-equipped laundry is shown in the Illustration.

If we consider the machines used in the kitchen for cleaning purposes, a considerable list can be made, but the gas and oil stove and fireless cooker should not be forgotten, since they accomplish cleaning in a negative way, for they eliminate the dirt and ashes of the old-fashioned coal-range. Then, too, the automatic gas water-heater, and also the oil water-heater, gives the best material for cleaning that is known to mankind: hot water. But as electricity becomes more available we have the electric stove and the electric water-heater, which is superior to the gas and oil heater, as far as labor-saving is considered. Then there is the electric dish-washer, which performs all the washing, rinsing, and drying operations. The dishes and other tableware are securely held in removable racks while being washed, thus preventing breakage. When not in operation this dish-washer can be used as a white-enamel-topped kitchen-table. One must not forget the electric silver-polisher and knife-grinder and other smaller instruments for cleaning that can be operated by a small motor.

Machines for the Preparation of Foods

Machines of this kind include a great variety of small inventions intended to safely store the food, prepare it for cooking, and cook it. There is the small electric refrigerator, the thermonor which keeps foods chilled by evaporation of water, the ordinary ice-box, with its special door to put ice in from the outside, the special receiving-box in the wall into which the milkman can place his milk bottles in the morning or the butcher his meat. Then for the small house is the very important kitchen-cabinet with its special place for the keeping of flour, sugar, dish pans, and a hundred other things that are needed to be handy at the time of preparing the food. Electrically operated coffee-grinders, meat-choppers, bread-mixers, egg-beaters, toasters, coffee-percolators, chafing-dishes, samovars, frying-pans, tea-kettles, radiant grilles, and other similar devices are but a few suggestions of the multitude of inventions actually on the market and found practical as labor-saving machines. Why should one sweat at the brow on a hot summer day freezing the ice-cream when an electrically driven motor can do the same work at the cost of a few cents? Why should one swelter in the hot kitchen during the jam and jelly making season when an electric fan can give the necessary cooling breeze, and the electric stove apply the heat more to what it is cooking than to the surrounding atmosphere? Of course the answer is that the cost of such equipment is too high, but we are gradually learning how to make these articles cheaper, and also learning how much energy they save us. Old traditions are breaking down in the kitchen, and the new machines are accepted more readily than they used to be. No longer does the younger generation think that what was good enough for father or mother is good enough for it. Grandmother used to wear her fingers down peeling potatoes and carrots, and stain them black, but daughter prefers to use a simple scraping device of hard stones set in a waterproof substance which acts like rough sandpaper upon the skins of the vegetables, and then grandmother used to chop meat in a bowl, but now it is put in at one end of an electric grinder and comes out hash at the other. The older generation of cooks were not attracted by labor-saving devices, but the point of view to-day is different. That is the reason that the small house is attracting more buyers to-day than formerly, for its small up-keep and its small and cheerful kitchen is means of escape from too heavy household duties.

Machines for Moving Objects About the House

The electric dumb-waiter belongs to this class, but it is not installed in small houses very often. However, every one can afford the clothes-chute which guides the dirty clothes down to the laundry. The table-service wagon is a very convenient help in serving a meal and removing the dishes when there is no maid to wait upon the diners. Then there is the china-closet which opens through to the kitchen from the dining-room. The dishes are washed in the kitchen and placed in the closet, and at the next meal they are taken out from the dining-room side without waste of steps. The old ash-can need not be lugged out of the cellar if a small telescope hoist is installed, and the coal can be put into the cellar through a metal coal-chute instead of through the window. Wet clothes from the laundry can be hung out of the window on a revolving dryer without going out into the yard, or placed in an electric dryer in the laundry on rainy days. The transportation of small objects about the house can be very much reduced if machinery for this purpose is installed in the beginning. Most people think it is worth the price, and as soon as they see a way to paying for it, they are certain purchasers.

Machines that Automatically Keep Watch

There is no need of getting up at five o'clock in the morning to turn the draft on in the furnace so that the house will be warm by breakfast. An electric thermostatic control can be made to do this, and in fact it can be regulated to keep the house in good temperature all the day. It is not necessary to light a fire to have hot water if an automatic gas-heater is next to the boiler, which lights the gas with a pilot-light when the faucet is turned on or when the temperature gets below a predetermined number of degrees. One does not need to worry about burning the roast in the oven if an automatic clock-timer is on it which turns off the gas after the meat has cooked the correct number of hours. Food in a fireless cooker never worries the housekeeper, for it will not burn, and she knows it will be ready to serve when taken out. She does not have to stay home to let the delivery boy in with the vegetables, for he can put them into a small metal box built into the wall, which has a door that permits him to put his goods in but does not permit any one getting an arm into the house, and the iceman can deliver ice without calling her to the door. And so it goes; each new invention along this line removes the need of thinking of the small things about the house and of being continually on hand and a slave to them.

(*Continued on page* 106.)

Power-House, Naval Torpedo-Station, Newport, R. I.

C. W. Fairweather, Architect.

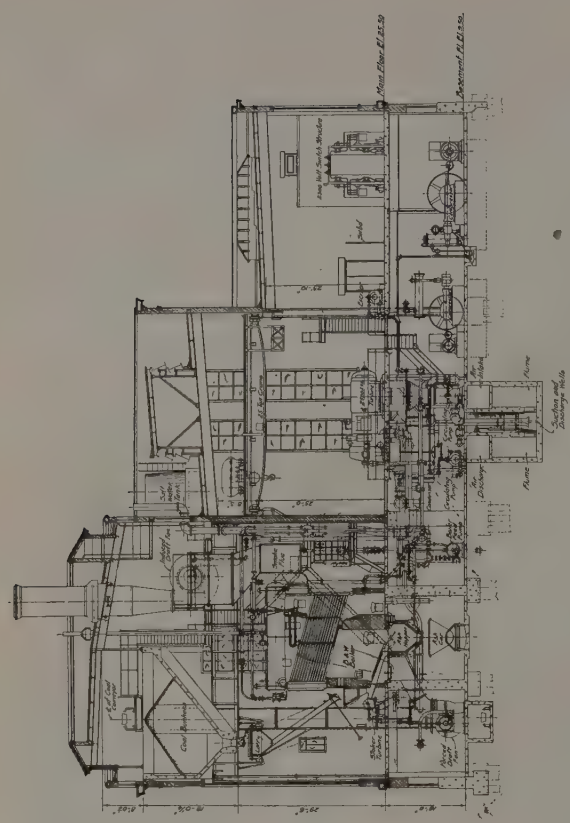
Power-House for the Naval Torpedo-Station, Newport, Rhode Island

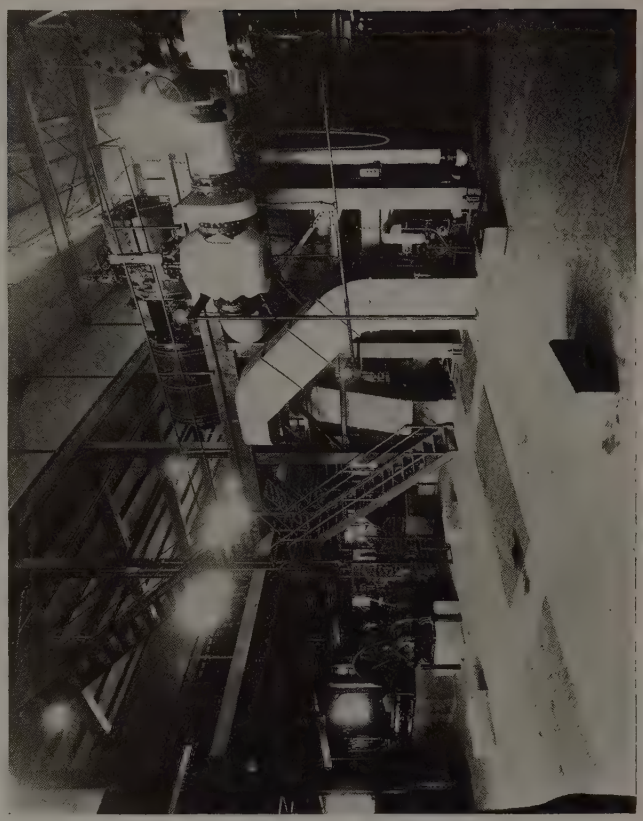
PERHAPS one of the most difficult problems for the architect of to-day is the design of the industrial building. Fifteen or twenty years ago, when steel sash were not in vogue, the designer had a fairly free scope in working out the proportions for this class of work. And the result was lamentable. The old-fashioned factory was usually sturdy enough in construction and sometimes happily conceived from the point of view of exterior proportion, but it was poorly lighted and badly ventilated, and was a poor place for the housing of workers and the manufacture of goods. Then the days of steel sash arrived, and manufacturers offered light frames and lots of glass, and the essential sanity of the idea caused the evolution of the modern factory which usually consists of bays on about 20-foot centres—because the steel work on such centres works out economically—and of the 20 feet, about 16 or 17 are devoted to sash. And we dress the building up with a cornice and a base, and put a little ornament in the brick spandrels and a touch of cut stone here and there, but when we are all through, we feel rather prouder of the practical efficiency of the modern factory than of its æsthetic qualities.

But the steam power-house and the hydroelectric plant do offer an opportunity for the artistic, since both are to some extent monumental in character and do not require any extraordinarily large area of sash. Thus the designer has a free hand in regard to proportions.

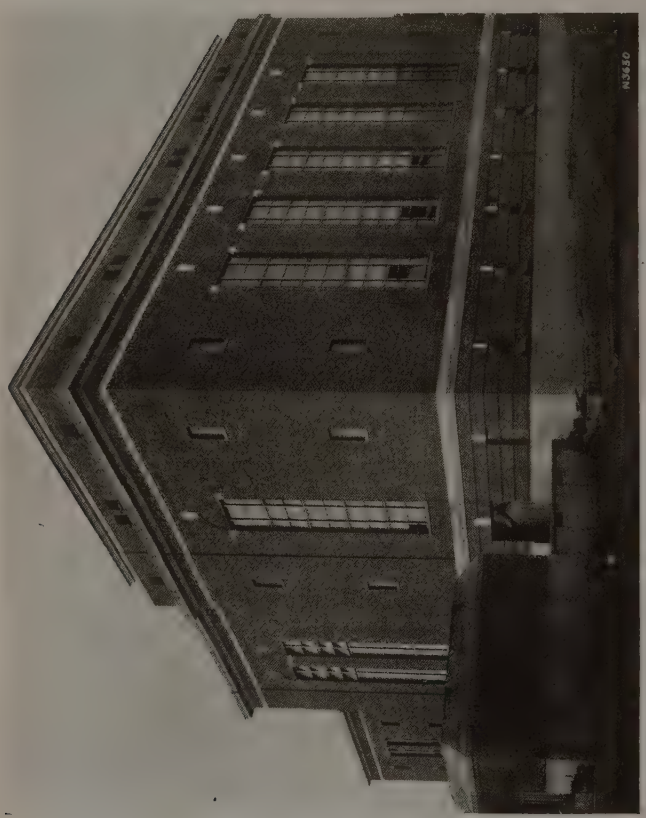
Among the many modern power-houses recently constructed by Dwight P. Robinson & Company (with which Westinghouse, Church, Kerr & Co. has been consolidated) the plant for the Naval Torpedo-Station at Newport, Rhode Island, although comparatively small, is probably as complete as any development of its kind ever carried out. This plant was designed and constructed under a contract awarded by the Bureau of Yards and Docks, Navy Department, in November, 1917. C. W. Fairweather was the architect.

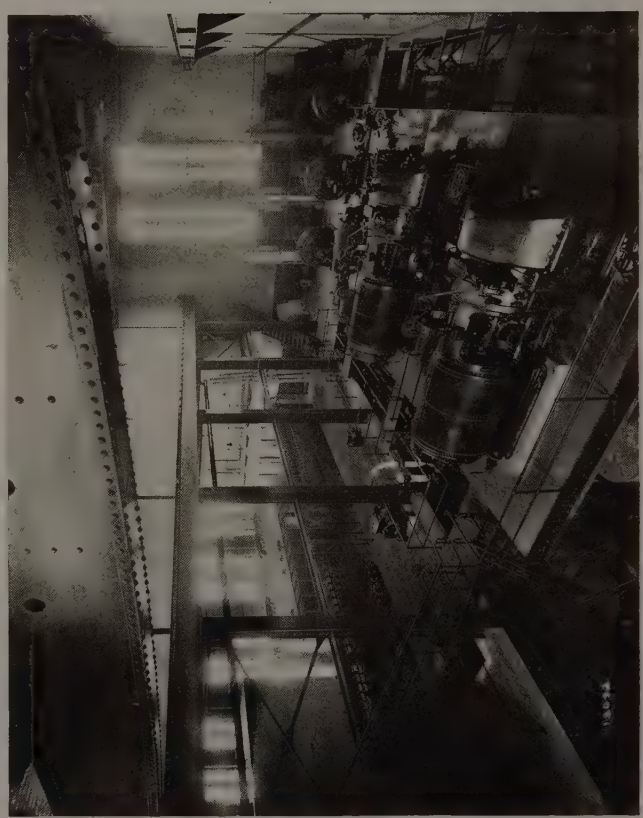
The design for the boiler-house required a ground floor, an operating floor about 16 feet above, and a gallery floor above the boilers. The equipment consists of four 500-horse-power Babcock and Wilcox boilers set in two batteries and equipped with Westinghouse underfeed stokers, forced and induced draft-blowers, overhead coal-bunker, travelling weigh-larry, two turbine-driven centrifugal boiler-feed pumps





C. W. Fairweather, Architect.





POWER-HOUSE, NAVAL TORPEDO-STATION, NEWPORT, R. I.

and one feed-water heater; also two hot-water heaters and two turbine-driven centrifugal pumps for circulating hot water for heating the buildings on the Island, and three duplex motor-driven fire-pumps. The pumps and forced draft-blowers are mounted on the ground floor, the boilers and stokers on the operating floor, and the induced draft-blowers and hot-water heaters on the gallery above the boilers.

The turbine-house design required a ground floor and an operating floor. This building is equipped with one 300-kilowatt and two 2500-kilowatt turbo-generators mounted on the operating floor. Each turbine is equipped with a surface condenser, turbine-driven centrifugal circulating pumps, and vacuum and hot-well pumps which are mounted on the ground floor; also two 500-kilowatt rotary converters with transformers which are mounted on the operating floor.

The operating floors of the switch-house, turbine-house, and boiler-house are all on the same elevation. The switchboard and switching equipment are located on the operating floor. On this floor also are the superintendent's offices and a repair-shop. On the ground floor below the switch-house there are installed three Ingersoll-Rand multi-stage high-pressure air-compressors designed for a capacity of 50 cubic feet of air per hour compressed to 3500 pounds pressure; also two multi-stage high-pressure compressors designed for a capacity of 150 cubic feet of air per hour compressed to 1800 pounds pressure, and three two-stage air-compressors designed for a capacity of 200 cubic feet of free air per hour at 100 pounds pressure. The compressors are motor-driven. The accumulators for the high-pressure air and the air-receiving tank for low-pressure air are also mounted on this floor.

Floor space in the building is provided for one extra 2500-kilowatt unit, two extra boilers, and one rotary converter.

The final design of the building is a modification of a series of steps from the switchboard-room up to the boiler-room. Since the extreme height in the boiler-room is needed at the centre, only the main roof line was lowered, providing a raised portion in the middle with a hipped Ludovici-tile finish. A monitor was designed for the turbine-room for ventilating purposes, which offered an opportunity for raising the end walls sufficiently to run the main boiler-room cornice along the turbine-room wall. Very careful attention was given to the spacing and size of windows and piers to help make the building as interesting to the eye and as correct as possible.

As the plant was built during the war, it was felt that a rigid economy should be exercised in the selection of materials and that the work should be so detailed that the labor of construction would be simple in character.

The exterior walls are faced with mill-quality Fiske-lock brick laid with large light-colored joints and backed with common brick, the facework being laid in running bond. The base is of concrete, light in color and bush hammered.

The trim is terra-cotta in simple mouldings enriched at the entrances. An ornamental structural frame was designed for the window-openings and filled with Trus-Con sash with few muntins. Exterior doors were of hollow metal.

Simplicity is the key-note of the interior, the walls being faced with common brick, as stated before, the floor having granolithic finish, and all walls and ceilings being painted in pleasant tones of green and buff.

The Prize-Winning Plans in New York's Model Tenements Competition

THE prize-winning plans in the recent competition for model tenements, held under the auspices of the Chamber of Commerce, the Merchants Association, the Advisory Council of the real-estate interests of the city, the Real Estate Board of New York, and the trustees of the Phelps-Stokes Fund, shown in this number of ARCHITECTURE, we believe, will be studied with interest all over the country.

The awards were as follows: First prize, consisting of the commission to erect a model tenement house on a lot 100 by 100 feet, Sibley & Fetherston, 101 Park Avenue; second prize, $1,500, Frank J. Schefcik, 4168 Park Avenue; third prize, $1,000, John Tompkins, 139 East Fifty-third Street.

In addition a supplementary prize of $100 was awarded to Raymond M. Hood, 7 West Forty-second Street, for his plan submitted in the preliminary competition.

The model house will be built on a plot 100 by 100 with 46 rooms, exclusive of baths, on each floor. Rents will be $1.80 a room a week plus 60 cents for bathroom or $16.80 a month for two rooms, $24.00 for three rooms, $31.50 for four rooms. This with hot water, steam heat, electric light, and janitor service.

The living-rooms will average 140 square feet, or 10 by 14 or 12 by 12. All living-rooms are to be 10 per cent larger than the minimum now permitted by the tenement-house law, and one bedroom will be at least 15 per cent more than the limit. All rooms will be outside rooms.

The estimated cost of this house is $200,000 complete. Of this amount $40,000 is set aside for land cost. It is estimated that the rental from this house will return 7 per cent net, and allow 1 or 2 per cent for a sinking fund.

In the two-room apartments there will be a bedroom about 10 by 14 and a living-room, dining-room with a kitchenette alcove 9½ by 18.8, and a bathroom with shower or tub as well as basin and toilet.

The other apartments will be arranged on the following standards: bedrooms, 8 by 10, living-rooms 10 by 14, kitchens 10 by 7.

As in the case of the second and third prize-winners, the house will have 40 per cent of the apartments of three rooms and 30 per cent of two and four rooms.

Mr. Schefcik, winner of the second prize gave the following facts with regard to financing his building.

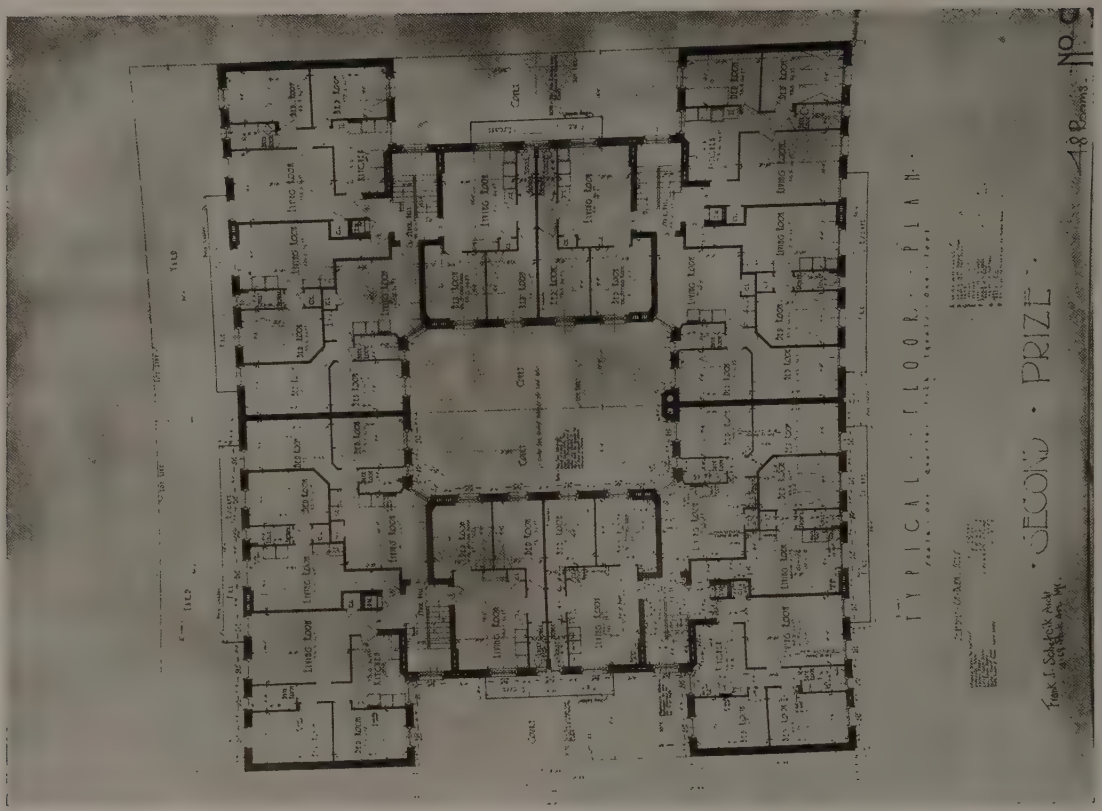
The cost to build is placed at $67,762. Twenty thousand for the land, an additional $20,000, making the total $87,762, or 30 cents a cubic foot.

Figuring the rental at $7.50 a room a month it will yield $12,780 a year. If figured at $1.80 a room a week plus 60 cents for bath the yield would be $13,845. This means 7½ per cent on more than $103,800. The assessed value o the property, put at $95,850.

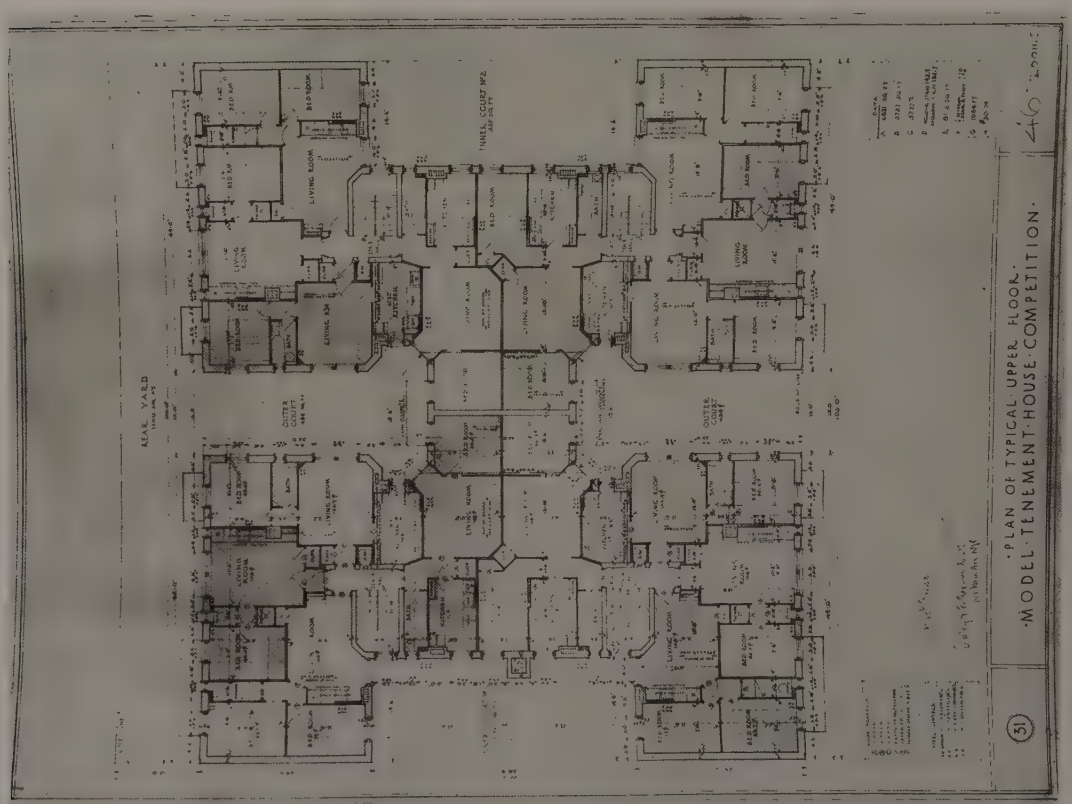
With these figures and assuming that the lender would take mortgages at 60 per cent of the cost, the result would be as follows:

The equity would be, with the 60 per cent mortgage, $35,105. The $13,845 rental would be a gross return of a little less than 40 per cent on the equity.

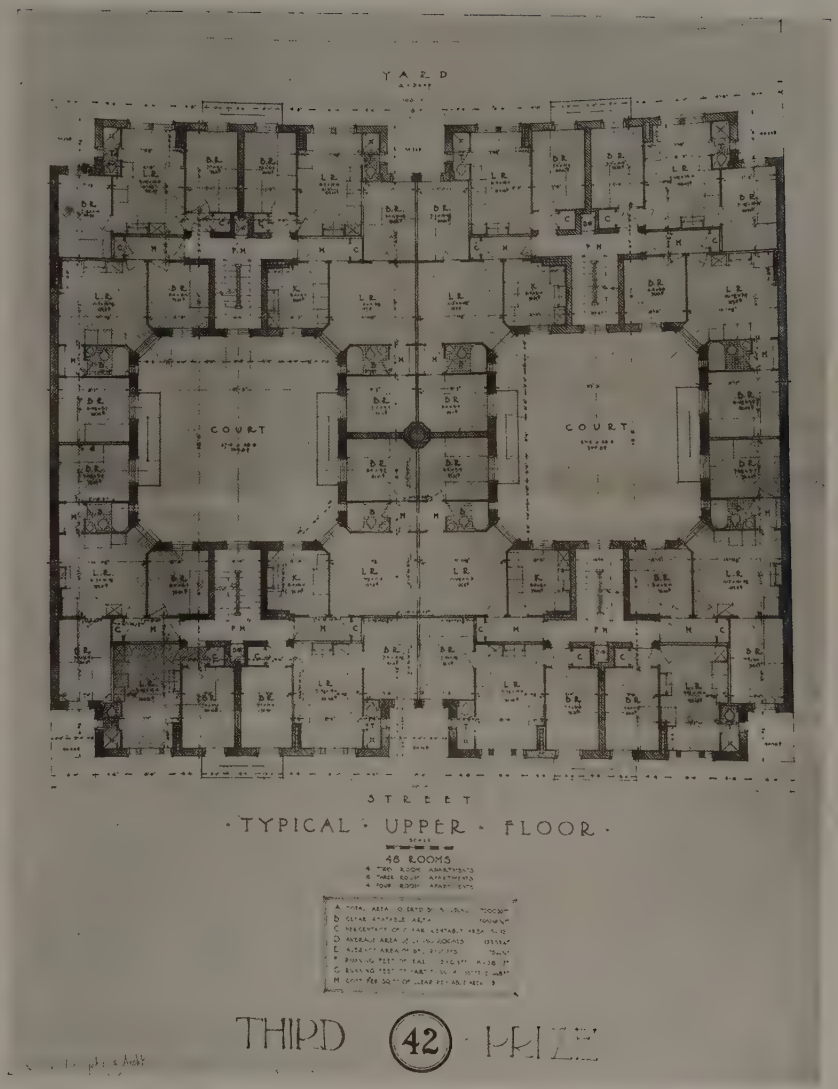
If the house is mortgaged to 60 per cent of the assumed valuation, the equity would be $30,252 and the gross return more than 42 per cent. These figures are significant when we consider what the profits must be to those landlords who have taken advantage of the shortage in housing that has existed in these past few years.



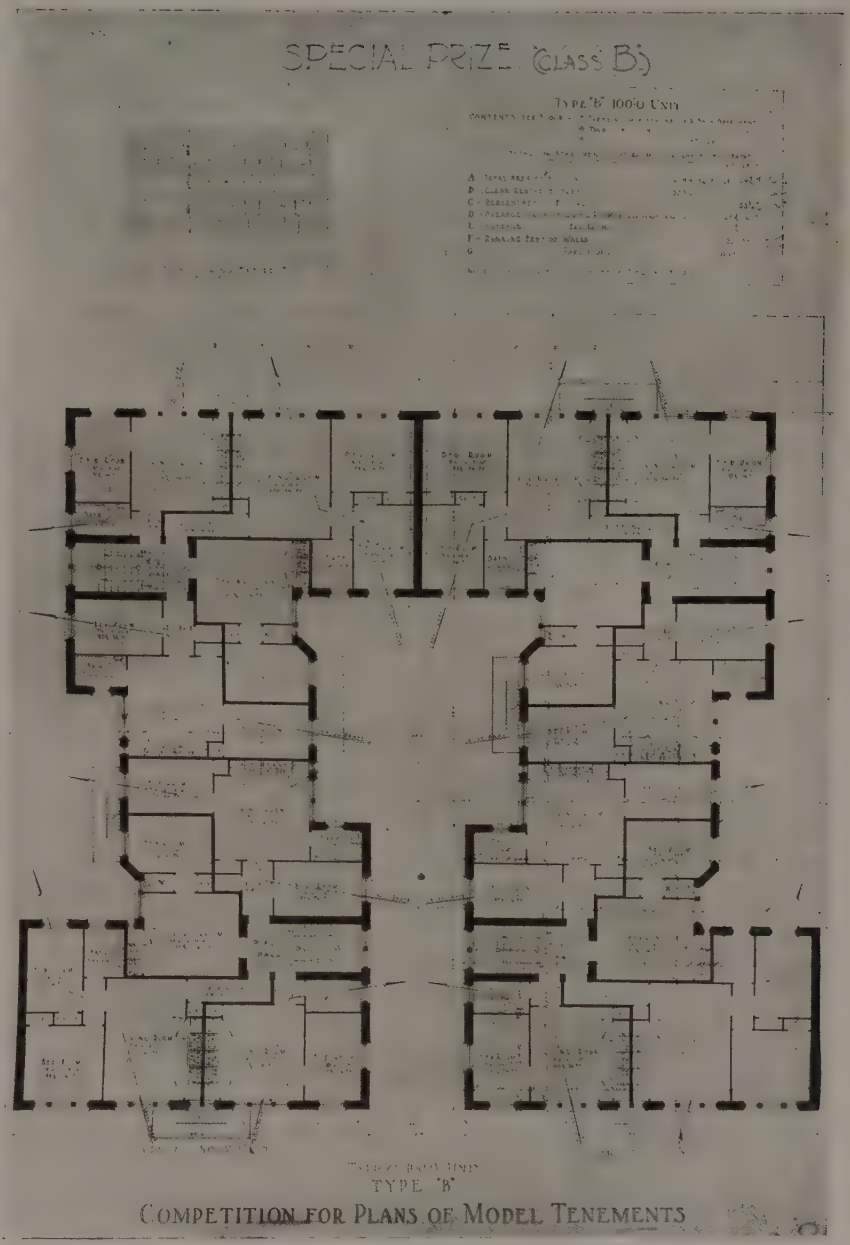
SECOND PRIZE, FRANK J. SCHEFCIK, ARCHITECT.



FIRST PRIZE, SIBLEY & FETHERSTON, ARCHITECTS.



THIRD PRIZE, JOHN TOMPKINS, ARCHITECT.



SPECIAL PRIZE, RAYMOND M. HOOD, ARCHITECT.

Concrete Construction

By DeWitt Clinton Pond, M.A.

ELEVENTH ARTICLE

IN the last article there was a discussion of certain rules dealing with flat-slab construction in the amendment to the Building Code of New York, adopted by the Board of Standards and Appeals, July 8, 1920. The rules referred to in that article dealt with the type of slab, allowable stresses, proportion and minimum dimensions of columns, column capitals, drop panels, the minimum thickness of slab and the sections with which it is assumed that a slab is divided for the purpose of design. It will be recalled that these sections were designated as column-head, outer, inner, and mid sections.

There is not much difficulty in establishing what is meant by the column-head and inner section. The first is directly over the column, and the second is directly in the centre of a panel. The names of outer and mid sections are apparently applied to the same part of the band connecting column-head sections, but if the direction of the reinforcing steel is taken with account, it will be seen that there is no real conflict in these terms.

Rule 12 gives an explanation of the notation used in the formulas for the design of reinforcing steel in the panels. The following notations are quoted directly from the code:

W is the total dead and live load on the panel under consideration, including the weight of drop, whether a square, rectangle, or parallelogram;

W_1 is the total live load on the panel under consideration;

L is the length of side of a square panel centre to centre of columns; or the average span of rectangular panel which is the mean length of the two sides;

n is the ratio of the greater to the less dimension of the panel;

h is the unsupported length of a column in inches, measured from top of slab to base of capital;

I is the moment of inertia of the reinforced-concrete column section.

Assuming a live load of 250 pounds per square inch, and such slab thickness and fill and finish as given in the last article, the total load per square foot will be taken as 380 pounds, and if the columns are spaced 20 feet on centres in both directions, the total load on the panel due to this construction is 152,000 pounds. In order to determine W—the first algebraic symbol given in the list—it will be necessary to add the weight of the drop panel. This was found to be 6 feet 8 inches square and 3 inches deep, so it will weigh approximately 2,000 pounds. W equals 154,000 pounds.

W_1 will equal only 100,000 pounds.

In the present case there is no question regarding the length of L, which is 20 feet. Had the panel measured 18 feet by 20 feet, L would be the average of these two dimensions of 19 feet.

n is of no importance in the first assumed case, as the panel is square, but in the case of such a rectangular panel as the one just referred to it would be 1.11, and it will be seen when section B of Rule 12 is considered that this ratio has no small significance.

The symbols h and I need no special comment.

Under Rule 12 there are three sections dealing with panel design and three dealing with column design. All six sections give formulas for determining the bending in slabs and columns, and are designated as sections A, B, C, D, E, and F.

Section A gives the formulas for determining the bending moments in the slabs of an interior square panel. It refers to "two-way," "three-way," and "four-way" reinforcing. In two-way reinforcing the bands may be considered as flat and wide girders supported between columns, and the inner section may be regarded as a suspended slab with steel placed in two directions extending over the bands at the mid-sections. In the bands the tendency toward bending is positive in the centre between columns and negative at the column-head section. In the inner section the bending is positive in the centre and is negative over the bands. Engineers often refer to the steel in the column-head and outer sections as band steel, and the steel in the inner and mid sections as slab steel. The bands are laid out in the same manner as shown in Figs. 4 and 6.

In the three-way reinforcing the bands are designed as shown in Fig. 7, and in Fig. 8 is shown the method of laying out four-way reinforcing. The question as to which system is the best is open to dispute. In theory the four-way system is the best, as all the steel, except a small amount in the mid-section, runs from column to column and the loading is carried back to the columns directly by the bands. It can be seen that in two-way reinforcing a load on the inner section is carried by the slab construction to the bands and then back to the column. It can be seen also that this resembles the method of carrying loads in beam and girder construction; first, from the beam to the girder, and then from the girder to the column. There are engineers who claim, however, that this theoretical advantage is out-

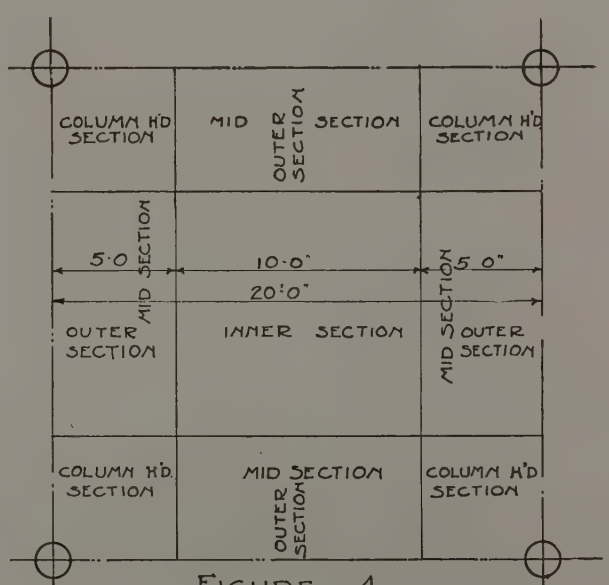


FIGURE 4

weighed by the fact that there is a mass of steel over the column-heads due to the fact that there are vertical, horizontal, and diagonal bands meeting at these points. As far as economy is concerned, there is very little difference in the systems as called for in the New York Code. It is understood that the code requirements are not the same as specified by the Joint Committee, and that there may be other ordinances which would make one system more economical than others.

According to subdivision 1, under section *A*, in two-way systems for slabs with drops the negative moment resisted on the two column-head sections should be $-\frac{1}{32}WL$. In the square panel referred to above, the negative moment in the column-head sections would be $-\frac{1}{32} \times 154{,}000 \times 20 \times 12 = 1{,}155{,}000$ inch-pounds, which is resisted by the bent-up band steel. The method of obtaining the area of steel required is exactly the same as employed in finding such an area in the case of a beam. If the distance from the bottom of the drop to the steel is $10\frac{1}{4}$ inches, as stated in the last article, the area of steel at the column-head sections is found as follows:

$$A_s = \frac{1{,}155{,}000 \times 8}{7 \times 16{,}000 \times 10.25} = 8.05 \text{ square inches.}$$

The above calculation is given simply for the purpose of showing the method of determining the area of steel required in case the depth of the drop panel is the same as specified for the minimum requirements. It may be that this depth will have to be made greater—as will be shown in the next article when an actual design in flat-slab construction will be investigated—in order to provide a proper area of concrete in compression.

The other negative moment resisted in a square panel is in the mid-section where the slab steel crosses the band steel. The formula for determining the moment at this point is given in the first subdivision as $M = \frac{1}{133}WL$. In the case of a 9-inch slab and a distance of $7\frac{1}{2}$ inches from the top of the slab to the steel, the area of steel required at the mid-section would be found in the following manner:

$$M = \frac{1}{133} \times 154{,}000 \times 20 \times 12 = 277{,}900 \text{ inch-pounds.}$$

$$A_s = \frac{277{,}900 \times 8}{16{,}000 \times 7 \times 7.50} = 2.64 \text{ square inches.}$$

The positive moments—for slabs with drops—are given in the rules as $\frac{1}{80}WL$ for the two outer sections and as $\frac{1}{133}WL$ for the inner section.

It is interesting to note the difference in the formulas given above for slabs with drops and the formulas given for slabs without them. In the latter case the negative moment on the two column-head sections is given as $\frac{1}{36}WL$, which is less than the same moment for slabs with drops. However, the negative moment on the mid-section is the same for both cases, $-\frac{1}{133}WL$. Of the positive moments the only one that is different is the moment on the two outer sections, which is given as $\frac{1}{63}WL$.

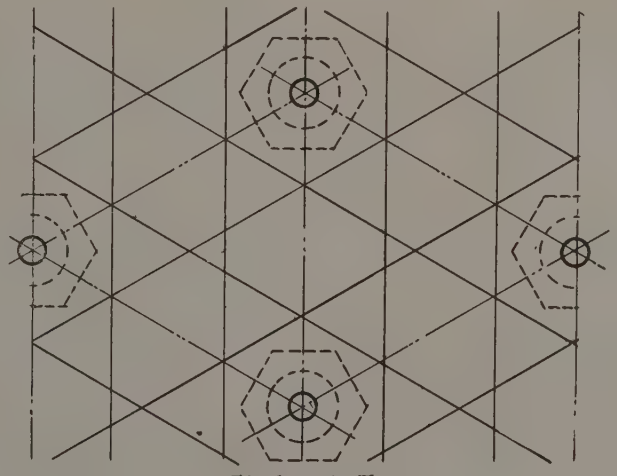


FIGURE 7

In four-way systems the negative moments are the same as given for the two-way system. For slabs with drops the positive moments in the two outer sections and the inner section are given as $\frac{1}{100}WL$. These formulas require little explanation. In order to obtain moments it is simply neces-

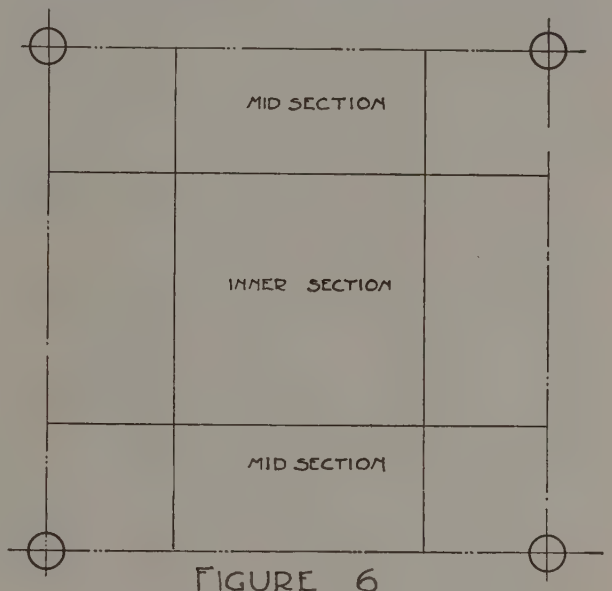


FIGURE 6

sary to substitute in the formulas. It is important to remember, however, in designing the steel for the inner section that, according to Rule 9, "the effective area of the reinforcement at any moment section shall be the sectional area of the bars crossing such section multiplied by the sine of the angle at such bars with the plane of the section." This rule will be discussed more fully later.

Formulas are also given in the rules for three-way systems. Such systems are not used as widely as are the two-way and four-way, as they require special spacing of columns as shown in Fig. VII in January number. The advantage of such reinforcing is found in the fact that the spans of the bands are all equal and that there is less steel at the column-head section than in the four-way method. From an architectural point of view it is claimed that the column spacing allows more freedom of circulation, as it is not necessary to make 90-degree turns at aisles. This feature applies to garages particularly, and it is claimed that it is a more simple matter to park cars in a garage having columns spaced in this manner than when the usual spacing is used.

When such a system is used the panels become parallelograms of the shape of two equilateral triangles placed base to base. In the rules for three-way design the load W is the load in such a parallelogram. The length L is the distance from centre to centre of column. The negative moments at the column-head sections and the mid-section are determined as required for the four-way sys-

tem, and positive moment for the two outer sections is also the same as required for the four-way system. It will be noted that there is no inner section.

In section *B* rules and formulas are given for the design of rectangular panels. In the case of such panels the ratio *n* is important. In the first subdivision of this section is the following statement:

"When the ratio *n* does not exceed 1.1, all computations shall be based on a square panel of a length equal to the average span; the reinforcing shall be equally distributed in the short and long directions, according to the bending moment coefficients specified for interior square panels."

As an example of a panel in which the ratio is within the above limits, one having columns spaced 20 feet on centres in one direction and 19 feet on centres in the other can be investigated. Such a panel will measure 19 by 20 feet and the ratio will be 1.05. In such a case the design is exactly the same as it would be for a square panel measuring 19 feet 6 inches square.

Methods are given in the second subdivision of section *B* for determining the bending moments in a rectangular panel where the ratio *n* lies between 1.1 and 1.33. It is significant that no methods are given for such determination in case the ratio exceeds 1.33. No sanction is given to a panel measuring 18 feet by 25 feet when the ratio is 1.38. For such a panel the determination of the reinforcement would be a special problem and the calculations would have to be submitted to the superintendent of buildings for approval.

In the case of rectangular panels having ratios between those given above, the load *W* is taken for the entire panel. In the case of an 18-foot by 20-foot panel the load *W* would be:

$$\begin{aligned} \text{Slab load} &= 18 \times 20 \times 380 = 136{,}800 \\ \text{Drop} &= \quad + \quad 2{,}000 \\ & \qquad\qquad 138{,}800 \end{aligned}$$

The moments for a two-way system in the sections at right-angles to the long dimensions are determined as for a square panel, except that *L* is given a value equal to the long dimensions of the panel, and the moments for sections at right-angles to the short dimensions are found in the same manner, except that *L* is given a value equal to the short dimensions. As an example of this, the moment in the two outer sections at right-angles to the 20-foot dimensions of the above panel would be:

$$\tfrac{1}{8\,0} \times 138{,}800 \times 20 \times 12 = 416{,}400 \text{ inch-pounds.}$$

The same moment for the two outer sections at right-angles to the 18-foot dimensions would be:

$$\tfrac{1}{8\,0} \times 138{,}800 \times 18 \times 12 = 374{,}760 \text{ inch-pounds.}$$

From the above figures it can be seen that a square panel is more economical than a rectangular one, for the same load —138,800 pounds—could have been carried on a square measuring 18.97 feet on a side. The substitution of 18.97 feet for *L* in the above formulas would show that the sum of the moments would be less than given above. The loss of economy is not great in the above case, as the ratio is only slightly over 1.1, but as this increases toward 1.33 the loss becomes greater.

In a four-way system for a rectangular panel the band steel—in the column-head and outer sections—is designed in

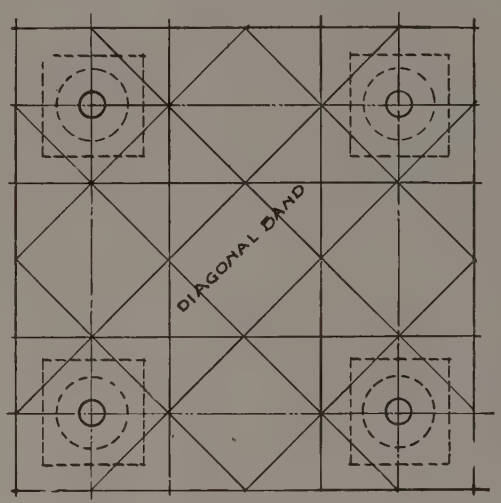


FIGURE 8

the same manner as for a two-way system for the same type of panel, but in the design of the steel in the diagonal bands and in the mid-sections, *L* is taken as the *average* length. In a diagonal band, with *L* taken as the average length, only $\frac{7}{1\,0}$ of the area of steel is available for reinforcement, as the sine of 45 degrees is approximately 0.70.

The rule for determining the moments in the three-way system for rectangular panels is quoted below:

"In the three-way system, the negative and positive moments on the bands running parallel to the long dimensions shall be determined as for a square whose side is equal to the greater dimension; the moments on the bands running parallel to the short direction shall be determined as for a square whose side is equal to the lesser dimension. The load *W* shall be taken as the load on the parallelogram panel under consideration."

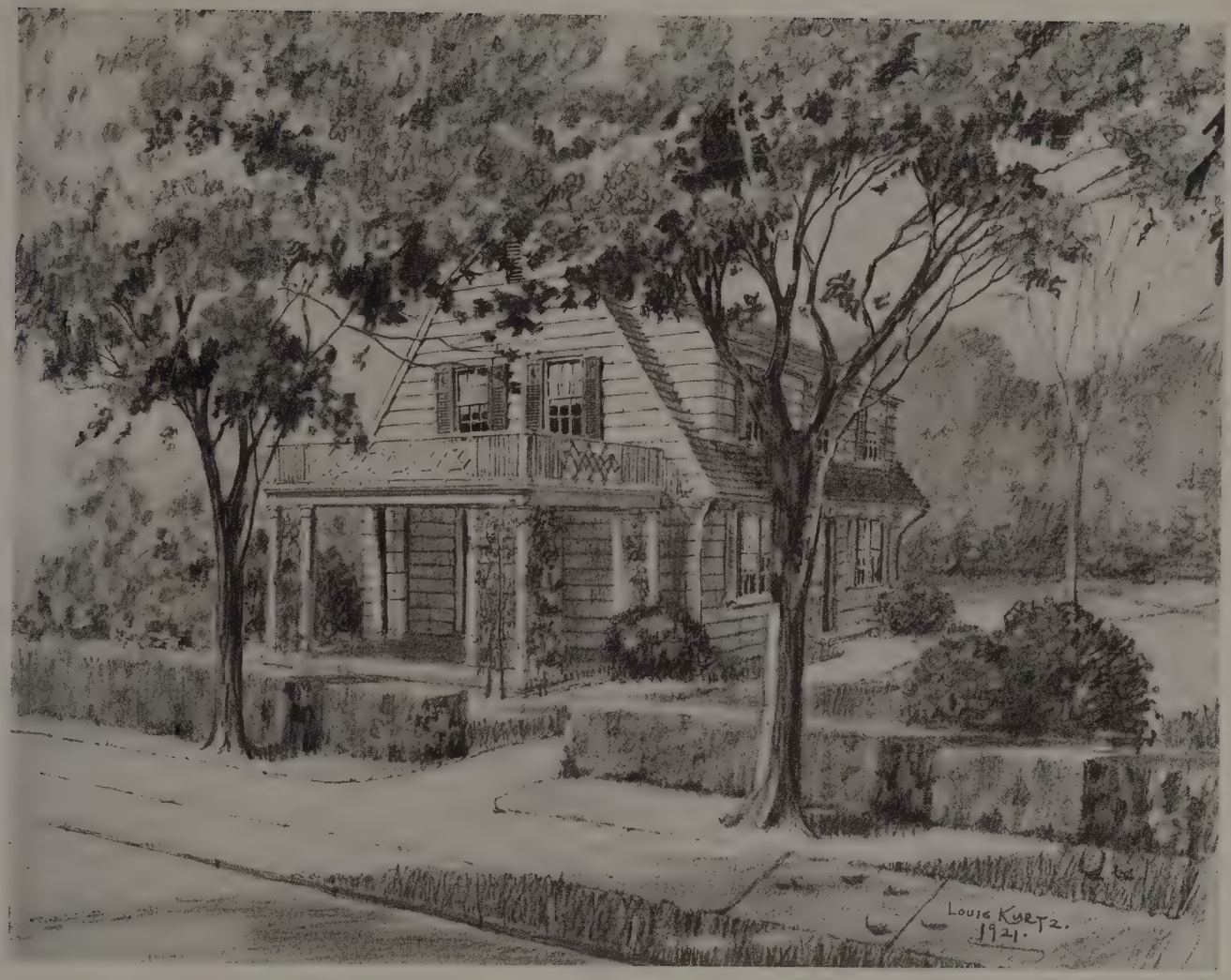
The sections dealing with the design of exterior panels, bending-in columns due to unequal loading, and beams under walls on flat slabs and at openings, will be discussed in the next article, as well as a comparison of two-way and four-way reinforcing designed in accordance with the above rules.

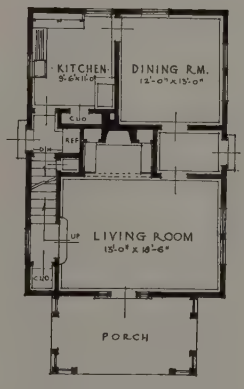
Strength of Southern Pine and Douglas Fir Compared

THERE is little difference between the strength of the Southern pines and that of Douglas fir from the Pacific Northwest, tests made at the United States Forest Products Laboratory show. True longleaf yellow pine averages heavier, stronger, and tougher than Douglas fir. True shortleaf pine averages heavier and tougher than the fir, but is about equal to it in strength as a beam or post. Loblolly pine, though averaging heavier than the fir, is somewhat weaker. The difference in strength between any of these pines and Douglas fir, however, is not so great but that low-density pieces of the one species are weaker than the average for the other species.

"Technical Notes," Forest Products Laboratory, U. S. Forest Service, Madison, Wisconsin.

Edward Buehler Delk, Architect, 59th and Ward Parkway, Kansas City, Mo., wants to secure a copy of ARCHITECTURE for November, 1912.

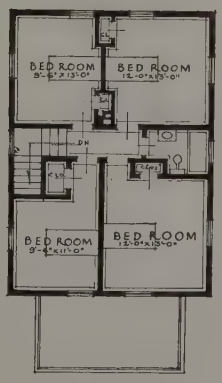




FIRST FLOOR PLAN

·HOUSE·AT·YONKERS; N.Y.
·ADOLPH·WITSCHARD·
·ARCHITECT·
56-WEST 45TH ST. N.Y.C.

·SCALE·



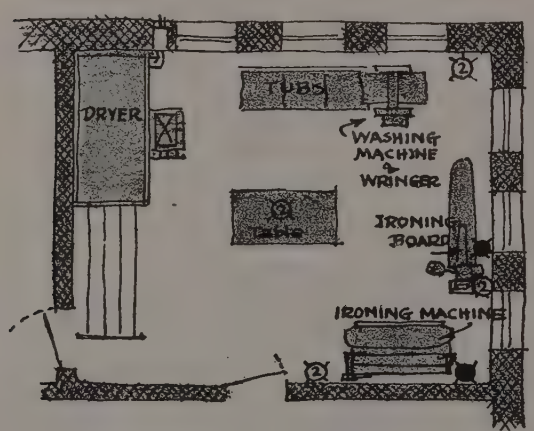
SECOND FLOOR PLAN

(*Continued from page 96.*)

Machines to Simplify the Toilet

We often forget the elegance of the modern bathtub, but think of the labor of our forefathers when the bath night came around. The water had to be heated on the stove, the tub gotten out and filled with cold water from the pump, and then warmed up with the water in the teakettle, and after all was finished the water and tub had to be removed. It was quite an event, and there is no wonder that a bath was taken only once a week. But what is it to have a bath to-day, with plenty of hot water, a thermostatic control of its temperature, a fine shower and a warm bathroom. But such things as a bathroom with its modern lavatory, water-closet, and bathtub and tiled floor and wainscot are commonplace things, and are always expected to be installed in a house. One does not question the advisability of spending money on this equipment, and so it will be in the future with much of the machinery which we hesitate to buy to-day on account of the additional cost in the construction of the house.

If one is willing to spend the money, electrically operated shampooing-machines can be installed, curling-irons, vibrators, ozonators, hair-dryers, shaving-mugs, heat-baths, etc., but these seem luxuries to us yet. But will the next generation look upon them this way? A very elegant bath room may also be equipped with built-in receptacles in the tile wainscot for holding soap, sponges, toilet-paper, tumblers, tooth-brushes, etc. Fine white-enamelled medicine-cabinets are not uncommon to see built into the walls. Glass rods for towels and glass shelves for miscellaneous objects add much to the practical up-keep of the bathroom. Faucets over the bathtubs and lavatories are now covered with white enamel and have porcelain handles, so that the work of polishing nickel ones is done away with. Water-closet bowls are designed with such deep water-seals and with such powerful flushing-jets that they do not need the cleaning that the older types required. Tubs are built into the walls and down on the floors, so that dirt cannot collect under them as it did under the old leg-supported tubs. Thus each year brings forth more improvements that are helping to reduce the labor of keeping house.



UP-TO-DATE LAUNDRY

To Build Cheaper Houses of Brick

"THE brick industry is working out a scheme to raise a million dollars to aid home-builders and is pushing a new and economical method of bricklaying so a brick home can be built more cheaply," says Ralph P. Stoddard, secretary of the Common Brick Association of Cleveland, at the annual brick convention at St. Louis recently. "During the past two years brick manufacturers have been working out new methods of using brick so brick homes can be built at low cost. The first development was the Ideal wall—a hollow wall of solid brick—now being used from one end of the country to the other. Due to this new wall, thousands of houses are going up in brick which would otherwise have been built less permanently. Building codes in a hundred cities recognize this lower-cost construction, a remarkable record for one year.

"But the brick industry would go further," continued Stoddard. "Under the new financial scheme, any responsible head of a family of good character who desires to own his home will be aided from a central million-dollar fund subscribed by the industry. Each loan must be approved by the local brick manufacturer and by a responsible local bank or building and loan association, which latter will have the actual handling of the money. This loan," he said, "will help fill the gap between the amount normally loaned on construction and the cost of the house. We know a brick house is worth more than any other type of house, although it does not necessarily cost more, and we are willing to back this up with our money.

"A new trowel has just been introduced to further cut brickwork cost. It looks much like a grocer's old-fashioned sugar-scoop, and is filled with mortar in the same way."

ARCHITECTVRE

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PLATES AND ILLUSTRATIONS

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"CIVIC VIRTUE." By Frederick MacMonnies, Sculptor.

(*See pages 117, 118*)